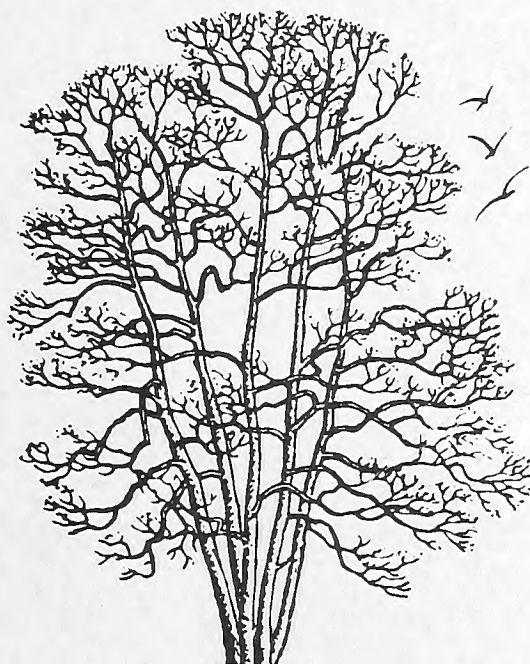




**THE
EDINBURGH
NATURAL HISTORY SOCIETY**



JOURNAL
1978

EDINBURGH NATURAL HISTORY SOCIETY

1978

PRESIDENT	Mrs. M. Watson	
VICE-PRESIDENTS	Miss J.K. Raeburn Miss M. Mowat	
HONORARY SECRETARY	Mrs. C. Stewart 41 Craigleith Hill Avenue, Edinburgh EH4 2JL Tel: 031-332 7524	
HONORARY TREASURER	Mr. C.P. Rawcliffe 35 Comely Bank Road, Edinburgh EH4 1DS Tel: 031-332 5296	
MINUTES SECRETARY	Miss K.P. Wilson	
COUNCIL MEMBERS	Mr. W. Clunie Mr. W. Farquhar Mrs. E. Fraser Mr. R. Frame Mr. H.G. Ford Miss B. Gordon Mr. G. Bell Mr. M. Robinson Mr. K.W. Sanderson	appointed 1976 1976 1976 1977 1977 1977 1978 1978 1978
JOURNAL COMMITTEE	President Honorary Treasurer Mrs. E. Farquharson Miss H. Jackson Miss J. Raeburn - Convener	
EXCURSION COMMITTEE	Mrs. E. Farquharson 6 Chamberlain Road, Edinburgh EH10 4DN Mrs. S.G. Gray, 40 Oxbgangs Road, Edinburgh EH10 7AX Mrs. H.M. Miller 72 St Albans Road, Edinburgh EH9 2PG Mr. C. Pountain - Convener 33 Baberton Mains Crescent, Edinburgh EH14 3DY	
RECORDS SECRETARY	Mrs. E. Hamilton Woodridge, Ancrum Road, Dalkeith, Midlothian EH22 3AJ	
EXCURSION REPRESENTATIVE on the COUNCIL	Mrs. S.G. Gray	
LIBRARIAN	Miss F. Howie	

CONTENTS

	<u>Page</u>
EDITORIAL	2
WINTER INDOOR MEETINGS	4
DUTCH ELM DISEASE IN THE LOTHIAN 1978	7
LOCH LEVEN: A LOCH WITH SOME PROBLEMS	10
IN THE MARL LOCH, ABERLADY	15
AN ORNITHOLOGICAL SECTION	
Duck, Wader and Passerines on the Forth Islands	17
Forth Island Bird Count	20
BTO Golden Plover Survey 1976-77, 1977-78:	
The Lothians	22
Sundry Observations	24
AN ENTOMOLOGICAL SECTION	25
Phoridae (Diptera) as parasitoids of Sawflies	26
A Rare Ladybird found in the Lothians	27
Dragonflies	28
Wall Brown Butterfly seen on Berwickshire Coast	31
Common Cockchafer or Maybug	32
REFUSE DISPOSAL PROBLEMS WITH RELATION TO THE CITY OF EDINBURGH AND ITS WILDLIFE	32
CORSTORPHINE HILL TEN YEARS ON	34
SEA BUCKTHORN - FRIEND OR FOE?	35
SOME NOTES ON NATURAL HISTORY	37
FURTHER OBSERVATIONS MADE DURING 1978	41
EXCURSIONS 1978	43
REPORTS AND EXTRACTS FROM REPORTS	44
BOOK REVIEW	60

EDITORIAL

It is with deep regret that we record the death of our Honorary President, Mr. Peter Gunn who for so many years has guided and influenced the activities and outlook of the Society. His strong sense of duty seldom allowed him to miss meetings of the Council at which his years of experience and legal training proved invaluable. Within the Journal, members will find an appreciation by Mr. George Carse.

Contributions to the Journal, once again, cover a wide range of interests. The Editorial Committee would like to thank members for them, whether they be short observations of a few lines or longer notes, reports or articles.

Dr. J.C. Sheldon has reviewed the Dutch Elm Disease position at the end of 1978. Talking at Members' Night in March, he vividly made it clear to us what, for example, Princes Street Gardens would look like if all the elms were to disappear and no tree planting took place. Members are very appreciative of all the efforts which are being made to combat the disease and to encourage the planting of other trees to replace those removed.

In an article on Refuse Disposal, Mr. George Walker has highlighted another problem within the Edinburgh District, that of controlled-arising from the scarcity of suitable sites - as well as uncontrolled rubbish and litter dumping. Members can help a great deal by acting as 'watchdogs' for the threat to wildlife and livestock through indiscriminate tipping.

The article on Loch Leven by Mr. David Jones will be of great interest to members who will remember visiting the Laboratory of the Nature Conservancy Council in the area in 1976. His article helps us to understand the many facets of natural history which are inter-related as well as the basic principles that are relevant to present day uses of inland waters.

Throughout the year the Excursion Committee provided a varied and very interesting programme of outings. All reports of these are lodged with the Records Secretary and extracts from some of them are included in the Journal.

The Journal always gives a pleasant opportunity to thank the many members who support the Society throughout the year and help with its smooth running in all kinds of ways. At the AGM in October, Mr. Charles Rawcliffe intimated that he would be resigning from the position of Treasurer at the end of the year. His resignation will be accepted with regret, but with understanding. The Society will have an opportunity to show their appreciation of his work in looking after our finances for the last ten years at the next AGM. We are glad that Gordon Finnie and his associates and also Mrs. F.J. Anderson are continuing to help us with the production of the Journal.

During the year resignations have been received from Mr. C.M. Cumming, Mrs. M.A. Gollan, Mrs. P. Hughes, Mrs. E. Maccoll, Mrs. J.R. Rose, Dr. M.L. Ryder, Mr. and Mrs. T.P. Taylor, Mrs. C.E. Turpie, and Miss M.P. Wright.

We record with sorrow the deaths of Miss M.S. Aitken, Mr. P.W. Gunn and Mr. H. Laing.

Henry Laing who died on 13 December 1978 had been a member for several years. He had served on Council and latterly had helped to instal the PAS (Public Address System) at each evening meeting.

THE LATE P.W.G. GUNN

With the passing in his eighty-ninth year on 11 April, of Peter William Gordon Gunn, our Honorary President, the Society lost its oldest and one of its most notable members.

With an abiding and deepening interest from his boyhood onwards in botany, ornithology and photography, Peter Gunn was one of the first members to join the Edinburgh Natural History Society formed in 1921 when the Edinburgh Field Naturalists and Microscopical Society and the Scottish Natural History Society were united. Thus for more than 50 years Peter Gunn played an active and influential part in the affairs of the Society, being elected President in 1945. His achievements are engraven in the story of our Society during these 50 years, for he was readily forthcoming with fresh and constructive ideas designed to promote the well-being of our Society. Right from the start he placed his skill and experience at the disposal of the Society sharing with us his wanderings in the Highlands, the Borders, Dorset, and even the Dolomites and Austria. When weekend sojourns in the Cairngorms and other places of interest became an established part of the Society's syllabus, he entered enthusiastically into these projects. Throughout the years he was a regular and kenspeckle figure at a considerable number of the excursions.

He had a natural gift for friendship and was well-informed on a variety of topics including English literature. He will be remembered for his clear, incisive and well-stocked mind, for his unquenchable, refreshing enthusiasm which remained with him till the end along with unimpaired faculties, and for his unswerving integrity of purpose. We shall not readily meet his like again.

G. Carse

PROFUSION OF COLOUR

Carpets of misty blue on Pembroke cliffs	- Vernal Squill (<i>Scilla verna</i>)
A long ribbon of violet in a Deeside burn	- Dames Violet (<i>Hesperis matronalis</i>)
Hollows of pale mauve in the dunes at Littleferry, Golspie	- (<i>Viola tricolor</i> <i>ssp maritima</i>)

C. Stewart

WINTER INDOOR MEETINGS 1978

The speaker at the January meeting was Dr. John Miller of Edinburgh University, his subject, 'Patterns in Nature'. Dr. Miller said a scientist had been defined somewhere as "someone constantly looking for patterns", thus to simplify a world of apparent and frightening diversity. He therefore proposed to take the meeting on a kind of visual outing into the field of looking for patterns.

This he did with enthusiasm and conviction, pointing out and illustrating with slides, firstly in the inorganic world, the limited number of crystal shapes, the pattern of flow which one found time and again in liquids and gases, and the limited number of ways of branching. In the organic world, the limits were much extended but never random. The patterns of growth and form were governed by certain considerations, and, where these were the same, so would be the pattern of growth. This could usually be 'described' by mathematical law. He instanced the shapes of trees and leaves, the patterns of flowerheads and their fruits, the spiral shells of many molluscs, the radial symmetry of the Jellyfish, the external camouflage patterns of animals and the patterns described in the movement of animals. Altogether it was a fascinating field for study and observation.

In February, the Society was addressed by Dr. Ewan Clarkson of Edinburgh University on 'The Life of Fossil Trilobites'. Starting from the recognition that all fossils were once alive, the speaker said it was the task of the palaeontologist or the natural historian to find out the nature and circumstances of that life. It was an exciting but difficult job and first one had to find one's fossils. Trilobites, so named because of their three-lobed bodies, had lived from Cambrian to Permian times, ie from 550 million to about 200 million years ago, and had undergone many modifications during that long period. They were among the very first of organised animal life to appear on earth, swarming on the muddy bottoms of the Cambrian or Silurian seas, and it was their calcareous shells that had been preserved.

Dr. Clarkson showed slides indicating the various features of specimens from different periods of time and different locations. He spoke about the possible evolution from filter feeding to direct feeding, deduced from the differing positions of the mouth; the development of a protective 'roll-up' mechanism in response to the arrival on the scene of fish and other predators; the many-faceted compound eyes of which, in some specimens, the individual lenses had been perfectly preserved. Under the electro-scanning microscope, later specimens had shown prism-like lenses and others a remarkable bow-like structure in the lens which, in modern times, had been shown to be the ideal shape for collecting light. Fossilised legs, seldom found, had seemed to be two-branched, a walking part and a breathing part. How the animal moved had been deduced from the trails left in the mud and subsequently fossilised. It seemed possible that it could move in any direction. Growth had been accomplished, as in all arthropods, by a series of moults. Altogether, for an animal that had lived so long ago, the Trilobite had been remarkably well equipped for its kind of life. Possibly a reduction in ocean space had contributed to its extinction.

This lecture was an absorbing account of scientific detection.

At the March meeting, Dr. C.C. Wood of the Royal Botanic Garden talked on 'Plants and Animals'. In an interesting lecture, ranging for example and anecdote over the continents, Dr. Wood discoursed on the interdependence of plants and animals.

Without plants there would be no animals. From the termite to man, animals used plants as food, shelter and protection, and medicine. Man even 'designed' forests and the overgrazing of grasslands. Sometimes also, because of man's interference, the plants took over, as did the South American Water Hyacinth when transported to South Africa.

On the other hand, plants take advantage of animals to help, for instance, with pollination and seed dispersal. Also, some plants use animals as sources of necessary elements in their food, eg the insectivorous Sundew, Pitcher-plant and Venus' Fly-trap; and many plants and animals live together, to their mutual benefit, eg the Bull's Horn Acacia of South Africa which houses a species of ant in its thorns and the Yucca which hosts a species of moth.

Dr. Wood illustrated his talk with excellent slides and fascinating out-of-the-way information.

April brought Members' Night with an interesting variety of talks and slides. Dr. Sheldon gave a serious warning about Dutch Elm disease and asked members to help in spotting new outbreaks. He described, with graphic illustrations, the history, nature and course of the disease so far, its symptoms and effects. Mrs. Mary Wood showed some beautiful flower slides taken on Society outings, and Mrs. Farquharson took us on a lightning tour of the natural history of Orkney. Miss Raeburn talked about the booklet on the Natural History of Edinburgh that the Society hope to produce, and asked for the co-operation of all members in collecting observations made on the various walks in the area listed on the notice-board. Mr. M. Porteous spoke about a project he hoped to carry out on the Water of Leith with some of the older boys of the YOC. He asked for help in manning specific watching points on one early Sunday morning in May.

Miss Raeburn showed botanical slides taken on Society outings and other visits to interesting sites, and the President rounded the show off on an ornithological note saying she appeared to have two hen Blackcaps and one male in her garden this spring.

After the business part of the AGM in October, the Society's former Honorary Secretary, Miss Nora Henderson, addressed the meeting on 'Shetland and its Birds'. Illustrating her talk with truly magnificent slides of birds and scenery, she carried us with her from Fair Isle in the south to Muckle Flugga in the extreme north, showing us on the way the Bonxies of Fair Isle, the nesting Guillemots of Sumburgh, the Red-throated Divers of Spiggie Loch, the remote cliffs of Foula, the golden spit of sand over to St Ninian's Isle, the rocks and caves of Eshaness, the Gannet colony on the Noup of Noss, a remarkable close-up of Red-necked Phalaropes on a lochan in Fetlar, the ponies on the moors of Unst, the cliffs of Hermaness with their colonies of Gannets and Puffins and the 'Ultima Thule' of the lighthouse of Muckle Flugga, altogether a nostalgic evening for those who know and love Shetland.

In November, Dr. T.G. Fletcher came from his farm in Fife to talk about Red Deer. He first explained how he came to be so involved with this animal, through a research scholarship, awarded by Cambridge University on his graduation as a vet from Glasgow University, for the purpose of studying the Red Deer on Rhum.

A graph showed the inverse fortunes of Man and Deer on that island. After a period at the beginning of the 19th century when Rhum was deer-less, the species had been reintroduced and now the population was enormous. He, himself, was particularly interested in the animal's breeding habits and the relevance of the annual antler growth which is controlled by hormones, the antlers falling off in March, growing through the summer and the velvet being discarded for the mating season. This last period was preluded by the roaring, starting in September, when the stag stops eating, leaves the bachelor groups and loses fat. Mating fights were rare and seldom to the death. Mating took place at the end of the rut; gestation took about eight months and so most calves were born about June. The calves were very beautiful and were left in the heather while the hinds ranged far for food. Hinds can be domesticated and milked. An unusual event which he saw on Rhum was the birth of twins. He wondered how to reconcile the growth and use of antlers in mating with the reputed mating success of hummels. His observations on Rhum led him to believe that hummels were not all that successful, but it might be, in the wild, that hummels were not recognised as males and so had the freedom of the hinds. The sons of hummels, strangely enough, grew antlers.

Turning to deer-farming, Dr. Fletcher said this had been started in New Zealand in the 19th century and was now a profitable industry there, with about 30,000 deer being farmed for their flesh, their antlers and the antler velvet. In this country, government-financed experiments were going on in Morven and Kincardineshire on land unsuitable for forestry. He, himself, had concluded it was a realistic proposition, and had first tried for land in the Highlands but had to settle for a small acreage above Auchtermuchty in Fife. He had since become convinced that deer-farming was much better suited to Lowland ground than to the Highlands, where cattle were probably more rewarding. Scotland was at the northern extremity of red deer territory. The animal needed tree shelter, good grass and extra feeding in winter. All these he was able to provide at Auchtermuchty easily and economically. Deer were very proficient at producing lean meat, and his venison was in much better condition than that from wild deer shot in the Highlands, being free from warble-fly grubs etc. He did his own killing (stags only) and skinning, had his own laboratory for monitoring health problems, and had no difficulty in marketing his production.

For the last meeting of 1978, Mr. Picozzi came south from the Institute of Terrestrial Ecology at Banchory to talk about his work on the Hen Harrier in Orkney. This bird had been common throughout Britain up to the middle of last century but, as it was thought of as an enemy on the grouse moors and was easy to shoot, it had been eliminated on the mainland till the 1920s. It was still persecuted there because of the pressure to produce game.

From studies on the Orkneys done by Mr. E. Balfour, the bird was discovered to be polygynous there. As this was unusual, Mr. Picozzi's work had been directed at examining (1) the population dynamics, (2) how polygynous the bird was, and (3) the possible reasons for it. One was most likely to see the bird in winter and then the female as most males seemed to leave the islands then. Where they went no one quite knew. The male was the smaller and more beautiful bird, grey with black wingtip and yellow eyes. Both had small heads, long wings and tails, long legs and powerful feet for snatching prey. Orkney, with its wide range of vegetation in small compass, from heather to rich horticulture, provided good habitats for birds of prey and so, while in Wales and Ireland the bird seemed to be disappearing, in Orkney it was abundant, especially on the West Mainland, nesting in the long heather and always within reach of good farmland with good hunting. The speaker's area of study had been over a fairly wide expanse, much of it RSPB reserve, with many reed marshes and pools on which in winter there were communal roosts (three males to 13 females). In the middle of March the roost breaks up and the birds go off to the heather to mate. The nests are in long heather and difficult to find.

The study depended on being able to catch and mark individuals. This was difficult in the spring, especially for the males, but when these became aggressive in the summer it was easy. Catching was done by the use of decoys, Arabian nets and nooses, and marking was by wing-tab, ringing and radio-transmitter. A hide was set up near the nest. To find out who paired with whom was a complicated business, but it seemed that the sex ratio went wrong about the third year, when females were in preponderance. It seemed that the female's best chance of breeding was to attract the male and mate young and lay early in the season. As the male catches smaller prey than the female (pipits against grouse and rabbits) it is necessary for the female, early on, to leave the nest to forage, but up to that time she acts as an umbrella over her chicks. The newly-born are very vulnerable to exposure and predators, and so the more polygyny the fewer young reared. The chick, weighing 20 g at birth grows to 550 g (female) or 400 g (male) in 32 days and a week later is hunting for itself.

Polygyny is very rare on the Scottish mainland. Is part of the reason the difference in availability of food? At any rate it seems to be the preferred breeding strategy in Orkney, associated with a preponderance of females and perhaps a few super males. The question is still being studied by Mr. Picozzi.

K.P. Wilson

DUTCH ELM DISEASE IN THE LOTHIANS 1978

In my last review of the Dutch Elm disease situation in the Lothians, it was indicated that 1978 would be a crucial year in the spread and development of the disease throughout the Region, and indeed throughout the Central belt of Scotland. It was thus considered important to carry out more detailed disease detection work during 1978 to determine the true picture of the distribution and seriousness of the disease threat in the Lothians, especially in relation to whether it could be controlled at manageable levels. In this respect,

it is important to note that once established the disease cannot be eradicated other than through the results of a climatic change to cold unbroken summers. It was thus predicted that a cold wet summer in 1978 would significantly reduce disease incidents since this would reduce the movement habits of *Scolytus scolytus*, the elm bark beetle, which carries the spores of the fungal disease which it transmits to healthy elms as it feeds.

In preparation for the 1978 season, extensive surveys were carried out during the winter of all woodlands and copses in the Edinburgh area - the area of greatest disease threat - to trace breeding grounds of the beetle. As a result, 186 elms were discovered as being major infection sources. With the co-operation of the owners, all were felled and destroyed by 31 March. Through this, it was hoped to significantly reduce the infecting beetle population by destroying overwintering adults, which would be emerging during the summer, or larvae which would eventually change to the flying adult form.

The spring was late, following a long, cold winter which did nothing to reduce the beetle population. During May, however, we experienced several weeks of hot, unbroken summer weather with temperatures well above 62°F, the temperature at which the beetle becomes most active. The weather broke in mid-June and the rest of the summer was generally cold and wet - conditions which would have reduced beetle activity, including breeding, and which possibly killed off some of those that had emerged during the early hot spell.

The effects of the hot May were, however, very serious in relation to the development of the disease since it now appears that throughout southern Scotland it allowed the overwintering beetle to emerge and to become very mobile. It also speeded up the pupation of the overwintering larvae, to release an early flush of young *Scolytus* beetles. In and around Edinburgh it is now clear that beetles were emerging from small undetectable breeding grounds and, in July and early August, the consequences of this first flush of emergence became sadly evident as new disease symptoms began to rapidly appear in previously healthy elms throughout the Region.

In areas where the disease had been centred in 1977, it again broke out, despite extensive felling and clearance of diseased and beetle breeding trees during the winter. In the Dalmahoy and Dalmeny areas, it appeared at least twice as bad as in the previous season. In Edinburgh, where over 30,000 elms provide major landscape and ecological features of the open spaces, parks and gardens, the disease showed a serious new geographical distribution. In the west, around Cramond and Corstorphine, the situation was identical to that of 1977, indicating that the control measures had contained the disease. However, serious outbreaks began to appear along the Water of Leith from Balerno through Juniper Green, Colinton, Slateford and into the Dean Valley in the New Town. In the Grange and Morningside areas, including the Meadows, a new infection centre appeared and in August, outbreaks in the Craiglockhart area began to occur. As these City outbreaks developed many large and fine City elms began to show symptoms - trees which were invaluable to the local landscape being many hundreds of years old and which were clearly of historic significance in the development of the City since many were the remnants of old hedgerows of fields into which Edinburgh spread between 1830-1850.

Many of these City elms now exist on the boundaries of town house gardens, but because of their size and location they are enormously expensive to fell and destroy. But this must be done since an elm infected with the aggressive strain of the disease will die within about 12 months. As this happens the tree weakens and presents a major safety risk through the possible dropping of limbs - a characteristic of the species which is evident even when the tree is healthy. Clearly, in built-up areas, or along roads, footpaths etc, dead and dying elms must be cleared.

At the time of writing the disease has developed to proportions which would not have been imagined several years ago:

	Totals for Lothian Region		Total for Edinburgh only
	1976	1977	1978
Locations of outbreaks	7	80	131
Number of trees infected	25	476	716

The steady but rapid development of the disease throughout the Lothians unfortunately indicates that it is now a permanent threat to the elm population. Even in the City it is now clear that the beetle, contaminated with the aggressive strain of the fungus, has bred over the last season in previously undetected sites in dead elm wood in private gardens, on Corstorphine Hill, Craiglockhart and the Water of Leith. The result of this development is that in future years there will be a steady loss of elms in the City and the countryside each summer unless several unbroken cold and wet summers are experienced which would kill the beetle. This is perhaps an unlikely event since even this summer has had disastrous consequences.

The disease control measures must be continued for reasons of both safety and landscape preservation but as the elms become condemned the replanting of trees becomes more vital to ensure a rich and varied landscape for future generations. This programme begins this year with the Regional Council providing free trees to people who have had to fell diseased elms. This aspect will grow more important as more elms are lost. It will, however, ensure that in continuing with the disease control measures we shall hopefully witness a changing landscape and not one that dramatically becomes devastated by Dutch Elm disease as unfortunately has occurred in many southern areas of Great Britain.

As before, my final plea is that if you suspect a diseased elm, please report it so that it can be checked and diagnosed. If it misses our attention it could become a new beetle breeding ground which would aid the even more rapid spread of the disease. By control the disease may take 25 - 50 years to take its full course. At least if this can be achieved the replanting programme will mean a landscape which will gradually change from one dominated by elms in areas such as the Union Canal, the Almond Valley and Corstorphine Hill, to one made up of

other deciduous species, which will hopefully maintain the landscape and ecological wealth of the Lothian lowlands.

Dr. J.C. Sheldon
 Authorised Officer
 Dutch Elm Disease Control
 Lothian Region

(Tel No. 031-229 9292)

LOCH LEVEN: A LOCH WITH SOME PROBLEMS

It seems hardly necessary for me to review the importance of programmes of conservation in a natural history society journal, especially in connection with freshwater habitats. Examples in this area, mentioned in previous numbers of this journal, are the Lothians Pond Survey, which documented the number and variety of the remaining small water bodies in the region and, at Bawsinch, Duddingston Loch, the creation of new ponds to provide new habitats which go some way towards replacing those lost to urbanisation, agriculture and industry during recent decades. These aspects of conservation have been approached at a level which enables individuals or small groups of like-minded people to work very efficiently at the amateur level. Basic knowledge, enthusiasm and energy fulfil the requirements of such work.

However, conservation in freshwater habitats has unfortunately become a large-scale and world-wide problem involving considerable areas of water, millions of people and huge sums of money. Consequently, research and management is necessarily very complex and expensive. For example, parts of the Great Lakes of North America have been so affected by industrial and urban waste that a condition known as eutrophication has developed there. The end product of this development is a body of water, lacking fish (the natural end-point of freshwater production), practically useless for recreational pursuits and offensive to the eyes and nose of those living or working nearby. Eutrophication is one of the problems beginning to affect Loch Leven.

Ideally, biological productivity of natural waters is at its maximum when a balance is created between the growth of plants and the chemicals of which they are formed; between this plant production and the numbers of small animals that eat the plants (herbivores), and between the number of these herbivores and the carnivores or predators that feed on them. This latter category includes the fish and the occasional water-living mammal such as the otter.

In the richest waters, defined here as those containing the greatest variety of living material, these relationships and inter-relationships are interwoven into an extremely complex web. If conditions in the waters change so that, for example, the plant production increases out of all proportion to the number of grazing animals, then the excess plant material, the waste products of these plants and the products of their decay can not only kill off the animals, they may eventually kill the plant life too; in other words a condition of extreme eutrophication may develop.

In order to understand the complexities of a naturally occurring system and the points at which dangerous 'cross-roads' occur it is obviously necessary to spend a lot of time looking at all the different parts of a system to find out what makes it tick and where the weak links occur.

Just over ten years ago, the International Council of Scientific Unions initiated a programme of ecological studies entitled the International Biological Programme. Within a section called Productivity of Freshwaters an intensive study of Loch Leven, Kinross-shire, was started. This loch is famous for its trout-fishing and historically it is well-known as the site of one of Mary, Queen of Scots periods of imprisonment. More recently it has become famous as a nature reserve and well-known to ornithologists for the adjacent bird reserve belonging to the Royal Society for the Protection of Birds. On the reserves and the loch many species of duck and geese not only overwinter but breed very successfully.

A great deal of effort, both financial and physical, was put into a wide range of research topics, all of which aimed to discover the relationships of many different parts of the environment formed by the loch. The fact that the loch was already showing signs of eutrophication with high algal production and reduced fish production (86,000 fish in 1960 - 9,500 in 1971), made the studies very immediate in their application to practical problems of the loch itself as well as being very relevant to world-wide problems. Although IBP studies were only intended to last for five or six years, problems in conservation continue to arise and as there is now a considerable amount of scientific information available from this work it is being well utilised in a reduced programme of research.

The answers to problems in Loch Leven are, of course, applicable to similar water-bodies elsewhere although, in Scotland, this loch is not typical in its form and characteristics. A large proportion of Scottish lochs are 'linear' in shape, filling a narrow, glacier-cut valley, the end of which is blocked by the moraine debris left by the melting of the glacier at the end of the last ice-age. They are mostly long, narrow, steep-sided and relatively very deep. Loch Leven on the other hand is broad, almost triangular in shape and, on average, very shallow (mean depth 3.9 m). Even the deepest parts are no more than 25 m deep and when the water level is low considerable areas are no more than half a metre deep. About half the area of the loch is less than 3 m deep even at normal water level. The considerable areas of shallow water might be expected to carry dense stands of plants, but at present this is not so. One factor which causes a reduction in plant growth is the exposure of the loch surface to strong wind action. These winds can in a short time create considerable wave motion and this stirs up the bottom sediments, sand and mud in the extensive shallow waters. Two effects of this are that sand has a scouring effect on the shores and may also be deposited on top of the plants in shallow water. Mud is also carried in suspension by the wind-induced currents. The presence, absence or relative abundance of rooted plants will bear a relationship to the success or failure of some species of waterfowl that feed directly on the plants themselves and will be of importance to the small animals that shelter among the plants and to any predators of these which may include other species of waterfowl.

The sediments themselves will have, living in association with them, a variety of different species of animals. The group name for these 'bottom-dwellers' is benthos. Among the many varied and numerous animal groups found in the benthos are the midges that belong to a family called the Chironomidae. The larvae or grubs of these flies live mainly among the bottom materials at all depths of the loch, in very large numbers. They form an important part of the food of both Trout and Perch as well as of the Tufted Duck. Consequently, any changes in the production of these larvae may well affect the success of breeding and growth in their predators. Such variations were found during IBP studies when an eightfold decrease occurred in one important species and a nine-and-a-half-fold increase occurred in another species, both within one year. Changes, less well documented, in the presence and absence of many other species of invertebrates and of plants have been recorded in scientific papers during the past 150 years and the general trend has been for species to disappear leaving a much less varied fauna and flora at the present time.

In the water above the bed of the loch live not only the fish, but also the plankton. This term covers all the minute floating plant-life (phytoplankton) and the microscopic animals (zooplankton) which graze upon it, together with other small animals which feed on the grazing animals or on each other. The plankton does not exist in isolation, but is associated with the benthos and the fish, some of which feed mainly on the larger zooplankton, although most of the life history of the plankton is passed suspended in the water.

The phytoplankton may include hundreds of different species (Figure 1b - e) not all of which may be found at the same time in equal numbers. The life history of these single cells, chains of cells or groups of cells may be completed in perhaps a few days or at the most a few weeks, after which time they are replaced in the loch populations by another species which finds conditions to suit its growth and reproduction, so that for a brief time it 'blooms' and then dies away to small numbers, or passes the rest of the year in some resting stage, perhaps on the bottom of the loch.

The herbivorous animals such as the water-flea *Daphnia* (Figure 1f) may find that one of the successful algal species suits it especially well as a food and it too may grow rapidly, reproduce and increase hugely in numbers for a period until it too either begins to outrun its food supply and starve, or is eaten down to lower numbers in its turn by some predator. Two copepods, small crustaceans, occur in large numbers in Loch Leven, especially *Cyclops* (Figure 1g), which in its mature or adult stage behaves mainly as a carnivore. *Diaptomus* (Figure 1h) seems to feed only on plant material throughout its life and one would think that, like *Daphnia*, in times of plenty it would be able to increase in numbers. However, this does not seem to occur and it may be that it forms the preferred food of young Perch (which may be present in the loch in their thousands during the summer) or else, in its young stages, it is eaten by the adult *Cyclops*.

This is one of the many problems in relationships that have been produced by past and current research. As one looks deeper into the patterns, recording what is happening throughout each season, more and

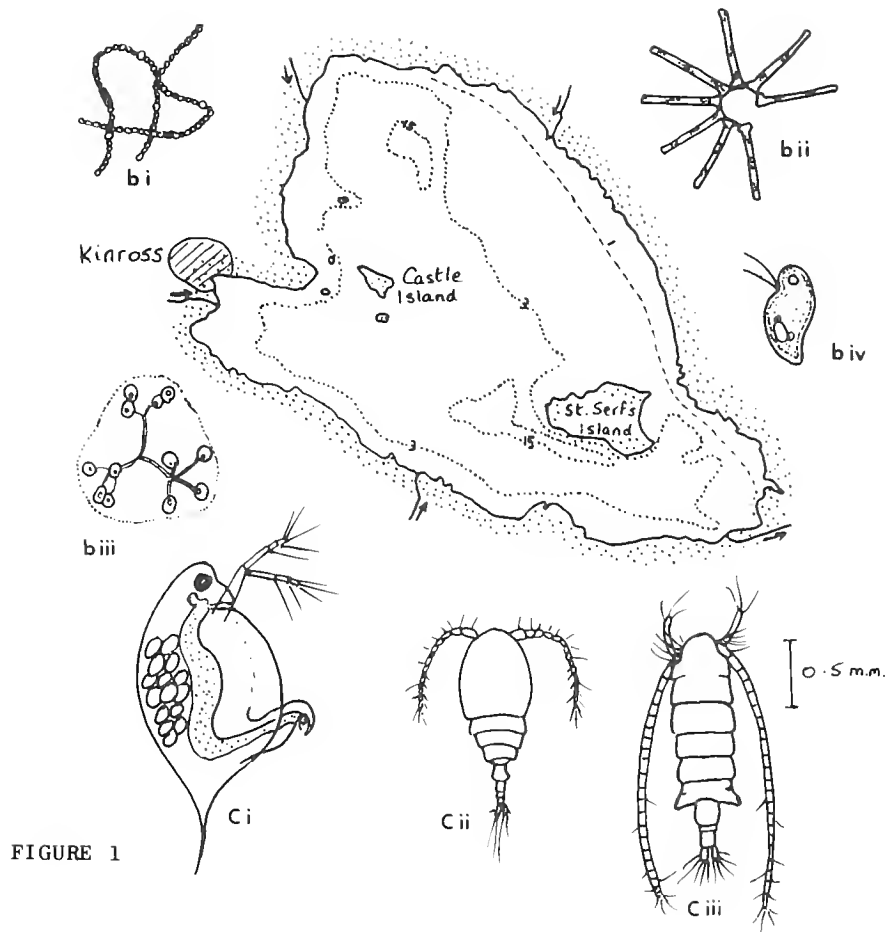


FIGURE 1

a) A map of Loch Leven showing the 1 m (partial), 3 m and 15 m depth contours.

b) Four species of alga found commonly in the phytoplankton.

- | | |
|--------------------------------|----------------------------|
| i. <i>Anabaena</i> sp | ii. <i>Asterionella</i> sp |
| iii. <i>Dictyosphaerium</i> sp | iv. <i>Cryptomonas</i> sp |

c) Three species of animals found in the zooplankton.

- | | |
|--------------------------------|---------------------------------------|
| i. <i>Daphnia hyalina</i> | ii. <i>Cyclops strenuus abyssorum</i> |
| iii. <i>Diaptomus gracilis</i> | |

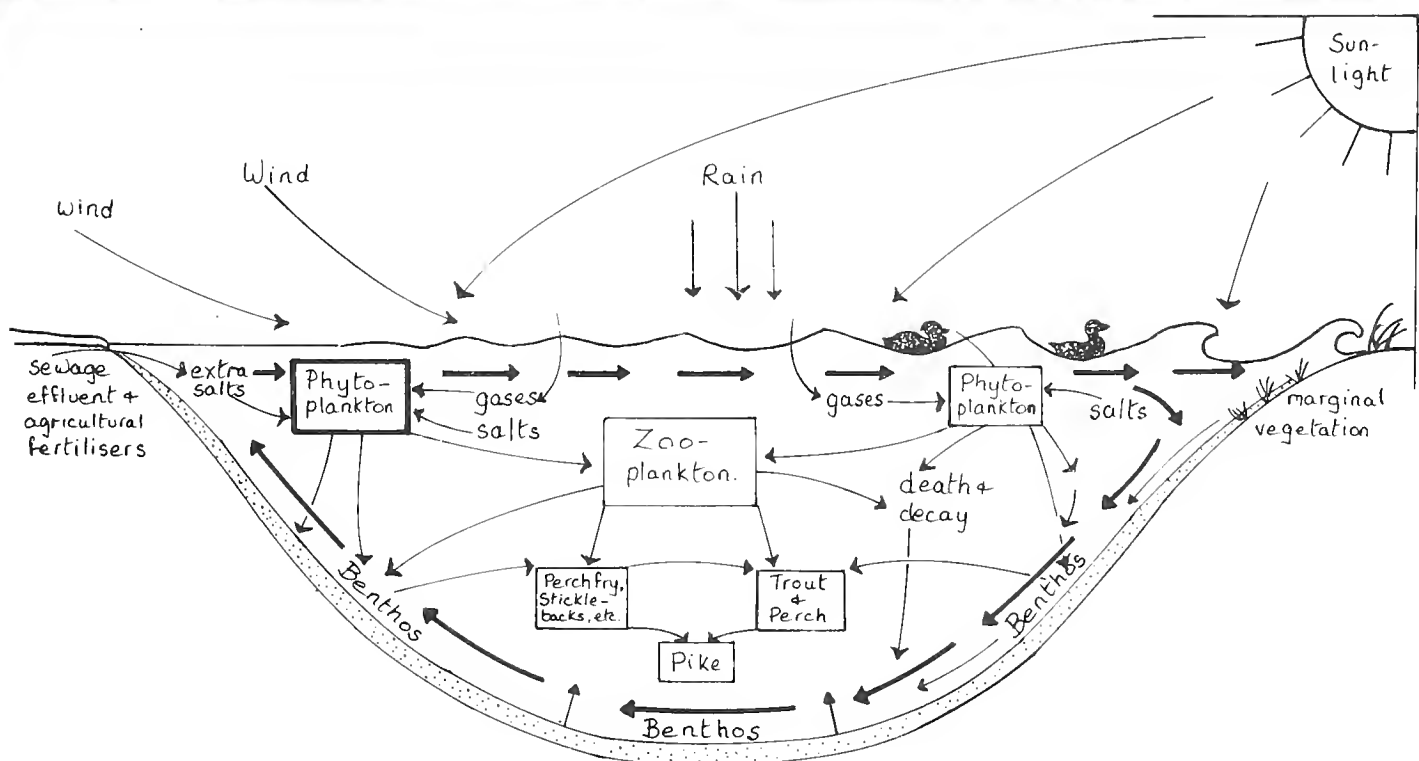


FIGURE 2 A diagrammatic representation of the physical, chemical and biological systems in Loch Leven. Heavy arrows indicate wind-induced currents.

more questions can be posed. One difficulty in understanding some of the anomalies is the lack of repeatable results from one year to the next. This is especially so when looking at species composition of the phytoplankton. There is a fairly consistent pattern of phytoplankton production throughout the year, with a large amount being produced in the spring and lesser 'blooms' occurring sporadically during the remaining summer and autumn months, but the species which constitute the 'blooms' are not necessarily the same each year. In the case of the zooplankton, too, anomalies occur. From 1966 until 1970 the water-flea *Daphnia* was not found in plankton samples taken regularly from the loch. From 1970 onwards it has been found in large numbers in each season; up to 300 per litre on some occasions. *Cyclops*, which was present in large numbers throughout the years of *Daphnia*'s absence, has, since 1970, been present in reduced numbers, approximately one-sixth of its previous level. As *Daphnia* feeds on phytoplankton it would have been more logical for it to have replaced the herbivorous *Diaptomus*, not the carnivorous *Cyclops*, but *Diaptomus* is now present in the loch in at least similar, if not higher, numbers. At the moment no certain explanation presents itself.

The earlier mention of the physical nature of the loch may perhaps give some guide towards explaining a little of the erratic behaviour of productivity in the past. Loch Leven is very shallow and the winds, wave action and currents stir up the sediments which include among them salts released from the breakdown of dead plant and animal material. In deeper lochs such disturbance only occurs at infrequent intervals, probably only twice a year, so that the salts are often in short supply in the upper layers of the loch. In Loch Leven they are almost continually being circulated and made available to the phytoplankton. The chemistry of the water is also influenced by the water entering the loch. Not only does untreated domestic sewage pass into the loch from neighbouring Kinross but also a certain amount of industrial sewage is passed into one of the feeder burns. This, in the past, contained a form of the chemical phosphorus which was evidently very important in encouraging the production of phytoplankton and led to the development of eutrophic conditions. Now, however, the quantity has been limited and controlled with a consequent improvement in water quality.

In addition the surrounding agricultural areas pass their wastes (eg pig farm effluent) into the burns and drainage from the fields inevitably carries with it a quantity of inorganic salts from fertilisers spread over the crops. These are the very items which enrich the water with abnormal quantities of nutrient salts and encourage the production of large 'blooms' of algae - much greater than can be controlled by the grazing animals. Because the amount of water passing in and out of the loch is not very great (there are no large rivers entering the loch, merely four small burns) the water remains in the loch for a comparatively long time. Because of the physical form of the loch and the continuous circulation of the water all the chemicals are well mixed throughout the loch and the plant cells are surrounded by the foods necessary to their growth, to the extent that they are rarely, if ever, restricted by a shortage of any materials and therefore almost always have this tendency to 'over-produce'.

Much more could be written about Loch Leven and the interesting facets of both its problems and the discoveries made during the research programmes, but this brief review can be no more than an introduction. Meanwhile, work continues and it is evident that the monitoring watch at present being made must be maintained for a long time before the changes that occur can be fully understood. I hope that it is also evident that the work involved in trying to understand such changes is not only fascinating but is also very relevant to present-day use of our freshwater resources.

D. Jones

IN THE MARL LOCH, ABERLADY

In summer, Bladderwort (*Utricularia vulgaris*) appears as short racemes of beautiful yellow flowers. Beneath this surface beauty lie the traps of a hunter, as this is a carnivorous plant.

There is little structural difference between stems and leaves, the whole plant branching out into narrow segments. Many small flat oval bladders are attached by short stalks to the leaf segments. These bladders have apertures with a valve-like door on which there are a few straight stiff bristles. Initially the water in the bladder is removed by four-armed hairs which line the cavity. The hairs absorb the water, which is passed out of the bladder, probably along the vascular bundles in the stalk. This causes the sides of the bladder to be drawn inwards, leaving the door delicately balanced. Whenever a small creature touches a bristle, the door collapses inwards with a sudden inrush of water carrying the creature inside. The door moves back to its former position and the process of absorption starts again. Half-an-hour later the trap is reset. As the creatures decay in the bladder, the nutrients are absorbed by the plant.

Lurking in the Bladderwort and other aquatic plants are Water Scorpions (*Nepa cinerea*) which are carnivorous insects. No relation to scorpions, they are only called so because of the manner in which they hold their forelegs in front of their heads, reminiscent of the way scorpions hold their pincers. Nepa nymphs cling motionless to the vegetation until a suitable victim approaches. They then lunge forward and secure the creature in their outstretched forelegs. They can be very quick and are able to catch fast swimming prey nearly as big as themselves. Holding the prey in their forelegs, they inject a digestive fluid which quickly kills the prey. The inside of the prey is sucked dry and the complete outer skin is then cast aside.

At the posterior end, Nepa has a long tube used for breathing. The tip breaks the surface and air is taken in. The breathing tube of the adult is proportionately longer than the nymph. The nymph sheds its skin as it grows and apart from the length of the breathing tube and a full set of wings, it looks little different from the adult. In the adult state Nepa prefers to live on the bottom and for this it is perfectly suited, as it has a very flattened body.

Also inhabiting the Marl Loch is the Water Spider (*Argyroneta aquatica*), the only spider in the world which can swim freely and live the whole of its life in water. Its only physical adaptation for

aquatic life is a water-proofing secretion from the spinnerets, which is rubbed on the legs and then the abdomen. As no silk can be seen at this time, it is assumed a water repellant secretion is being emitted. It is essential for the spider to remain dry, otherwise it will drown, so the spider has superbly adapted its way of life to this means.

The spider spins a platform of silk which is attached to plants. The silk bell is stocked with air brought from the surface around the spider's abdomen. The spider makes many trips for air, but when the bell is completed it will last a long time as carbon dioxide is absorbed by the water and if the oxygen content of the water is sufficient, the gas in the bell will be replenished with oxygen.

The spider brings its prey to the bell to feed. The male mates with the female in her bell, where she lays her eggs. In three to four weeks the spiderlings emerge and remain with the female for two to three weeks. The Water Spider is the only species of spider in which the male is larger than the female.

In winter the spiders descend to greater depths where they spend the winter immobile in stout, closed cells.

Out of the water *Argyroneta* looks like any other large hairy spider but submerged, the layer of air trapped around the hairy abdomen gives the spider a silvery appearance.

The Water Spider is distributed throughout Britain.

E. Gillespie

HIGHLIGHTING THE YEAR

We all have our individual and personal memories of excursions and notes helping to jog the mind, bringing back thoughts of a favourite moment.

I would like to nominate a few of mine for a non-existent award:

- a) Goosanders on the River Tweed;
- b) Great Spotted Woodpecker in East Craiglockart Hill Woods;
- c) Sand Martins at Humble;
- d) All the Owls at Eskdalemuir (see page 50);
- e) Mink on the Tyne Water;
- f) Tiny Toads in Linglie Glen.

My thanks to all these contestants and the innumerable others who gave me so much satisfaction and expected nothing in return.

J.H.W. Young

OVERHEARD...

During an exceedingly wet lunch stop, "*Now I know what a liverwort feels like.*"

At Kindrogan, "... lovely dung ..."!!

AN ORNITHOLOGICAL SECTION

Duck, Wader and Passerines on the Forth Islands

Islands generally have a much restricted range of fauna and flora and the tiny islands of Forth emphasise this poverty. The only duck species which breed are Eider, Mallard and Shelduck. Oystercatcher is the only wader present although Ringed Plover bred in the past. Passerine numbers are small and, although they have an interesting history, their prospects are poor on many of the islands.

The Eider Duck has increased in numbers during this century thanks to the various bird-protection laws. Rintoul and Baxter (1935) mention very old records from Inchkeith and Inchcolm but had no recent record of breeding. It bred along the East Lothian coast but obviously in much smaller numbers than there are today. Our Island Count visits in June record a lot of nests but are too late to give a real idea of total numbers breeding. However, we have had better success on our several May visits to various islands to count gulls. The RSPB have also kindly given permission for their Fidra and Inchmickery counts to be published here.

The Bass is probably too high and steep-sided for Eider and only the odd pair breeds. Craigleith is much more suitable and a thorough search of the island in May 1977 (with the YOC) revealed 60 nests mostly in the sheltered south basin and under cover of the extensive growths of Tree Mallow. On the Lamb the vegetation has suffered since the war due to the fouling activities of Herring Gulls and Cormorants and there is now much less cover for Eider. Between 1960 and 1962 we were finding seven or eight nests but since 1970 there have never been more than two. Fidra, on the other hand, gives ideal conditions for breeding. We usually see 20 to 30 nests in June but recent counts by the RSPB in May give a much more accurate idea of numbers. From 1974 to 1976 there were probably between 170 and 190 nests on the island with minimum counts of 140 in 1977/78. These counts suggest that breeding numbers of Eider on Fidra are not increasing at the moment. On Eyebroughty there are always a few nests - perhaps up to ten pairs breed.

The island of Inchkeith holds the largest colony in Inner Forth although before the war apparently none were nesting there. In his very interesting paper, Cameron (1960) tells us that seven to ten pairs bred between 1957 and 1959. In 1960 there was a definite increase with 27 nests being found. Our very imperfect June counts of adult birds give minimum totals of duck Eider around the island for various years - the drake are tending to flock and leave the area at this time.

Counts of Eider Duck at Inchkeith are as follows:

1962	1963	1969	1976	1978
88	110	140	200	260

In May 1975 a visit with the YOC found 82 nests. Complete coverage was not attempted and there must have been more than 100

nests on the island. It appears that the number of Eider nesting on Inchkeith is still increasing steadily unlike the position on Fidra where there may have been little change in recent years.

The picture on Inchmickery is also interesting. We saw a single nest in 1960 and three in 1961 with five by 1970. For information on the recent position I am indebted to the RSPB for permission to use their table of nest counts on this island.

Inchmickery:	1973	1974	1975	1976	1977	1978
Eider nests	7	10	16	30	31	40
Mallard nests	3	4/5	7	8	6	12

These counts show how Eider (and Mallard) respond under protection. In recent years there have been only a few controlled visits to the island and the duck are obviously benefitting from the lack of disturbance. On Eider 'farms' in Iceland with a similar complete protection, many hundreds nest in close proximity. It will be most interesting to follow this unintentional experiment in future years.

The other islands in Inner Forth hold only a few Eider with perhaps ten nests on Inchcolm, one on the Haystack and none on Carr Craig or, apparently, on Inchgarvie.

Mallard nest in very small numbers on the islands and are reported to set off immediately with the newly hatched young to the nearest mainland shore. One or two pairs breed on Craigleith, Fidra and Inchkeith with the astonishing total of 12 nests on Inchmickery in 1978.

Shelduck also nest in very small numbers with one to three pairs on Inchcolm, one pair on Inchmickery (two pairs in 1978) and perhaps an occasional pair on Fidra.

Of the waders, a pair of Oystercatchers was nesting on Craigleith in 1959 but not since, probably due to pressure of gull population. Four to five pairs breed on Fidra and similar numbers on Inchkeith, Inchmickery holds two pairs and the odd birds may try to nest on Inchcolm. Fidra is the only island with a shingle beach and held our only pair of breeding Ringed Plovers. However, they ceased to nest after 1972 - another victim of the gull expansion. Mr. Ritchie Seath tells me that he found a Redshank's nest on Carr Craig in the 1930s - a most astonishing record and one that has not been repeated.

Seabirds are large, noisy and easily seen and, on our annual visits to the various islands, it was obvious that many of them were increasing in numbers. Much less obvious was the difference in numbers of the small birds. Most of the time, indeed, we tended to pay little attention to them, and the decline in numbers of some species has only very recently become startlingly apparent. Fortunately there was a resident observer on Inchkeith (the lighthouse keeper, Mr. W.A. Cameron) at the start of the build-up of gull numbers on that island. Mr. Cameron has left an excellent record of the breeding strength of passerines in the period from 1956 to 1960 and the comparison between then and now provides the key to the impoverished passerine situation on some of the other islands.

On Inchkeith the big gulls have spread over the open inland areas and the birds that nested there have suffered most. In 1960 there were two pairs of Skylarks and ten pairs of Meadow Pipits. Both species have disappeared from there and also from Fidra. Seven pairs of Rock Pipits nested round the Inchkeith coastal strip in 1960. Now there are only three pairs breeding on the west side where some cover is provided by buildings. The open gull-covered east side of the island holds no passerines of any species. And so the sorry tale goes on. Blackbirds dropped from ten pairs in 1957 to two pairs in 1960 (for some unknown reason) and there are three to four pairs now; while Song Thrushes which used to have nine to 11 breeding pairs have now vanished. So have the two pairs of Dunnocks. Birds which find cover in the buildings, such as the Swallows and the five or so pairs of Wrens, are fairly safe, as are the House Sparrows, Starlings and Linnets (7, 38 and 8 pairs in 1960), but in reduced numbers. These species, Pied Wagtails and Carrion Crows are the standard passerines of the small islands. With trees and thick bushes, as on Inchcolm, Chaffinch and Greenfinch come in. When the lighthouses become automatic and the keepers disappear - so do the House Sparrows.

Reed Bunting is another interesting bird. There were none on Inchkeith when the island was grazed by sheep but they appeared when the grazing was stopped and the grass grew long and rank. There were two to three pairs in the late 1960s but now only one pair is still hanging on.

The East Lothian islands have the poorest list of small birds. Wheatear and Meadow Pipit used to nest on Fidra but now only Rock Pipit, Starling and a pair of Linnets and Pied Wagtails remain. Craigleith, with its much older gull colony, is even poorer with only Starling and Rock Pipit and the latter species, which used to be common there, was reduced to one bird seen in 1977 and not recorded in 1978. The Lamb has no breeding passerines at all. Only the Bass with its sheltered buildings and reduced number of gulls manages to produce Dunnock and Blackbird as well as the standard Rock Pipit, Starling, Pied Wagtail and House Sparrow. Feral Pigeons nest on many of the islands and Stock Dove is seen on Fidra and Craigleith and may possibly breed. On Fidra the odd pair of Partridges used to be seen and there is even a pre-gull record of a hen Pheasant with tiny young. This last event is unlikely to be repeated in the foreseeable future.

R.W.J. Smith

References:

Cameron, W.A. (1960). *Birds of Inchkeith* (unpublished manuscript).
 Rintoul, L.F. and Baxter, E.V. (1935). *A Vertebrate Fauna of Forth*.
 Edinburgh.

Forth Island Bird Count 1978

	Inchmickery/Islets	Inchkeith	Fidra	Lamb	Craigleith
Fulmar		410	77	1	52
Cormorant	18			129	80
Shag	12	2	3-4	23	143
Greater Bl Back			1-2		1
Lesser Bl Back	10	500+	c40	c4	380
Herring Gull	80	2	2400+	x	3000+
Kittiwake		291	243	55	450
Common Tern	429				
Roseate Tern	51				
Sandwich Tern	561				
Razorbill		18	19	9+	51
Guillemot		4	14	c750	1900
Puffin		1000	100		2000

Fulmar	- occupied sites not necessarily breeding
Craigleith Guillemots	- birds on breeding cliffs
Puffin	- all birds, on land or offshore
All others	- pairs or nests
x	- present but not counted
c	- about

Inchmickery counts by permission of the RSPB

Once again June weather proved erratic for island going. The Lamb/Fidra trip was postponed and, at the next attempt, only a few of us could land on Lamb and were ashore for only some quarter of an hour making the counts very rushed and less reliable. It is some slight consolation that this was apparently the only landing there this summer because of bad weather. The Inchkeith trip was again cancelled due to boat trouble and it has been decided not to try to go there again in future years until a more reliable boat is available. Fortunately, a small group was able to 'hitch' a lift to the island to count the sea-birds. The RSPB have, once again, very kindly allowed us to use their Inchmickery figures.

Cormorants are still on the move. There was a further shift from Lamb to Craigleith with 80 nests there in May although many of them were washed out by heavy June rains. Another 'splinter' colony has appeared, this time on Eyebroughty where eight nests were found by Miss Dorothy Davidson at the end of June. For many years Cormorants were mainly confined to one single compact colony on the Lamb and the reason for this scattering of new colonisations is obscure. The Cow and Calves group of Cormorants had increased to at least 18 nests on 2 June with about 60 adult birds present.

For the first year since colonisation began in Inner Forth Shag nests have not increased significantly. There were 49 nests on five islands, exactly the same total as in 1977. On Inchkeith

Kittiwake nests are down again, dropping from 404 nests in 1975, 351 in 1976, 338 last year and now only 291. With only a handful of Guillemots and Razorbills on these cliffs there can be no suggestion that Kittiwakes are being crowded out so some other adverse factor is at work.

In an interesting paper, Armstrong *et al* (1978) compare the mass deaths of Shags on the Farnes in 1975 with the 'kill' of 1968. In both of these incidents the mortality was caused by paralytic shellfish poisoning (PSP) caused by a super-abundance of a protozoan *Gonyaulax tamarensis*. This latest 'red tide' (see Journal 1975, page 28) may have killed some 600 or more Shags in the Farnes area. Most of these were breeding adults of which 63 per cent died, but, of the much smaller number of immature birds killed, most apparently were from further afield including many from the Forth. In 1976 breeding numbers on the Farnes had recovered to the 1975 level including a number of birds reared in the Forth area breeding for the first time. There was no evidence that breeding Shags in the Forth had been killed by PSP in 1975 but obviously recruitment to the Forth colonies from 1976 onwards would be seriously reduced due to non-breeders either being killed or being attracted to the vacant nest-sites on the Farnes.

Armstrong *et al* (1978) say that PSP has been recorded every year since monitoring by MAFF (Ministry for Agriculture, Fisheries and Food) started in North-East England in 1968, although the levels inshore have varied considerably. They suggest that recorded levels may be influenced directly by the frequency of onshore winds which prevent the rapidly increasing *Gonyaulax* population from dispersing into offshore regions. Significantly they say, "We also need to know whether nutrient enrichment in the Firth of Forth plays a part in causing outbreaks ...". In other words, do the enormous quantities of Edinburgh sewage dumped off Seafield contribute in any way to the occasional mass seabird deaths on the Farnes?

In 1977 there appeared to be far fewer Puffins than of late. However, this year record numbers were reported at all three colonies so all seems to be well. To continue on this happier note, Guillemots are also in very good numbers and, once again, an adult Black Guillemot has summered off Fidra. It would be nice if we could find a mate for this bird!

R.W.J. Smith

Reference:

Armstrong, I.H., Coulson, J.C., Hawkey, P., and Hudson, M.J. (1978). Further mass seabird deaths from paralytic shellfish poisoning. *British Birds* 71: 58-68.

BTO Golden Plover Survey 1976-77, 1977-78: The Lothians

Introduction

During the winters of 1976-77 and 1977-78 the British Trust for Ornithology sponsored a national Golden Plover enquiry to identify the wintering areas of the birds and their numbers on specific count dates. Additional counts of flocks throughout the winter and during passage were also encouraged to assess flock movements.

Prior to this survey no detailed study of wintering Golden Plover had been made in the Lothians (using the old county boundaries). 'Traditional' sites are well known and these have provided occasional records of flocks during winter and passage (Scottish Bird Reports 1968-75, Scottish Birds Volumes 5-8). Owing to lack of observers it was not possible for each flock to be studied in detail by individual observers, therefore flock range and movement can only be tentatively defined. However, it is hoped that the information which has been acquired will form a useful basis for any future Golden Plover survey.

Effects of the weather

Frost and snow at inland sites from November during both winters forced many Golden Plover to the coast or to leave the area altogether by the count dates. Indeed it is perhaps surprising how many birds stayed in the Lothians, even at some inland sites. The mild winters of recent years have apparently led to more birds over-wintering in the area than previously when most birds departed by December, except perhaps for those at favoured coastal haunts.

Golden Plover in the Lothians

In Britain two races of the Golden Plover are recognised: the 'southern' race (*Pluvialis apricaria apricaria*) and the 'northern' race (*P.a. altifrons*). Basically, the 'northern' race nests in the arctic and sub-arctic (Iceland, The Faeroes, Northern Scandinavia and Northern Siberia) while the British, Irish and Southern Scandinavian population is comprised mainly of the 'southern' race. The difference between them rests on plumage characteristics, the 'northern' race in summer plumage appearing much blacker from the face to the belly with a distinct white border between the black and the upper parts compared to the paler appearance and less well defined delimitation in the 'southern' race. However, intermediates between the two races occur and birds of apparent 'northern' plumage are recorded throughout the British breeding range - although these may not be true 'northern' birds.

Golden Plover, predominantly of the 'southern' race, breed on the Pentland, Moorfoot and Lammermuir Hills and some may be back in the nesting areas by the end of February, having probably over-wintered locally. By late March/April most flocks are likely to comprise of the 'northern' race. This is confirmed by late April/early May when many flocks include birds showing 'northern' plumage and generally these occur inland, the coastal flocks tending to reduce in numbers as local birds return to the hills.

By the end of July or early August most of the local breeding birds have left the hills and moved into the valleys or to the coast, eg the peak count at Aberlady Bay is during this period. (Some authorities consider that the appearance of flocks at this time may also reflect passage of 'northern' birds coincident with the movement of waders such as Oystercatcher, Curlew and Whimbrel.) Numbers increase in the Lothians during October/November reflecting a movement from further north which probably involves the 'northern' form, although in winter plumage these are indistinguishable from the 'southern' form. Thus the winter flocks very likely comprise a mixture of both races.

Results of the survey

The total number of Golden Plover recorded in the Lothians on the national count dates (and on an additional local count date during 1976-77) in both winters were as follows:

Count date	Number of birds:			
	West Lothian	Midlothian	East Lothian	Total
<u>1976-77</u>				
19 Dec (local count)	975	1528	1170	3673
8/9 Jan	2573	1404	2844	6821
<u>1977-78</u>				
26/27 Nov	1670	1400	3800	6870
31 Dec/1 Jan	3635	1865	3080	8580
4/5 Feb	525	1882	2824	5231

All sites where Golden Plover were recorded are listed below and in addition include sites (enclosed in brackets) where birds have been recorded but not during this survey.

A full report of the survey results is deposited in the library of the Edinburgh Natural History Society and complete details of counts and observations at each site throughout the two winters are lodged with the Scottish Ornithologists' Club, 21 Regent Terrace, Edinburgh.

West Lothian

Blackness Bay area
Bo'ness to Linlithgow
Kinneil
Livingston Village
Powflats, Broxburn
South Queensferry
Whitburn

East Lothian

Aberlady Bay/Gosford Bay
Barns Ness to Thornton Loch
Coldale
Dolphingstone
(Humbie)
Longniddry
Port Seton/Seton Sands
(Saltoun)
Tranent/Macmerry
Wallyford/Whitecraig (Midlothian)
West Barns to Dunbar
West Fenton/Drem
Yellowcraig to Tynninghame

Midlothian

Bilston
 Cobbinshaw Reservoir
 Cramond/Silverknowes
 Gilmerton/Bonnyrigg
 Gladhouse Reservoir
 Harperrig Reservoir
 (Howgate)
 Kirknewton
 Leith/Seafield
 Middleton/Tynehead

Newcraighall/Musselburgh
 Newlandrig
 Nine Mile Burn
 (Old Pentland)
 (Penicuik)
 Redheughs/Sighthill
 Remote/Peaston (East Lothian)
 Threipmuir Reservoir
 (Turnhouse)

A.W. Brown
 BTO Representative
 in the Lothians

Sundry Observations

8/ 1/78 550 Fulmar between Seacliff and Gin Head, East Lothian - over 400 on cliffs. Over 700 Gannet on and milling around Bass Rock.

5/ 2/78 About 600 Golden Plover on fields between Tantallon and Auldham. Two oiled Ringed Plover at mouth of Peffer Burn, Peffersands.

26/ 2/78 At least four Peewits on territories on Leadburn Moor this afternoon.

4/ 3/78 Two Dabchicks on River Tweed above cauld at Peebles - they have been present since December.

17/ 4/78 Singing Chiffchaffs heard today at Trotter's Brig (South Esk) and on the Gore Water below Gorebridge.

22/ 4/78 A Swallow feeding over the River Tweed at Fotheringham Bridge, Peebles. Three Common Sandpipers display flighting and calling on shingle banks of River Tweed below Neidpath Castle. Two singing Willow Warblers in larch plantation on east side of Manor Water above Old Manor Brig.

29/ 4/78 Feeding over River Tweed at Tweed Bridge area, Peebles, were two Swifts, eight Swallows and three House Martins at 1545 hr - at 1830 hr there were six House Martins, one Sand Martin and ten Swallows.

2/ 5/78 Forty-seven Pink-footed geese flew north over Bellevue, Edinburgh, at 1750 hr - cold with east wind and high cloud cover.

7/ 5/78 Migrating Swallows in evidence along coast at Eyebroughty.

16/ 5/78 Today is the first day I have noticed Swifts back in the east New Town, Edinburgh, breeding areas.

13/ 7/78 A pair of Shelduck with five young on the west lagoon at Musselburgh.

26/ 7/78 Twelve Common Sandpipers in the west lagoon at Musselburgh.

8/ 8/78 Saw a juvenile Sandwich Tern swallowed up by the soft ash on which it was standing in the mid-west lagoon at Musselburgh.

25/ 8/78 Last Swifts seen over east New Town, Edinburgh, breeding areas.

7/10/78 Still 40 Sandwich Terns at Musselburgh lagoons - some juveniles colour ringed (ex sands of Forvie?). Twenty-four Peewits resting on water's edge in mid-west lagoon at Musselburgh.

AN ENTOMOLOGICAL SECTION

Below a few notes, adapted from 'A Field Guide to Insects of Britain' by Michael Chinery, are given so that the general reader as well as the specialist may enjoy the articles which follow:

Diptera: The Order of insects of two-winged or true flies. The hind wings found in most other insects are reduced to club-shaped halteres or balancers. Many resemble bees and wasps as a result of mimicry, but the resemblances are only superficial. In true flies the name is usually hyphenated, eg house-fly. Other insects, not true flies, are spelt without the hyphen, eg dragonfly, sawfly.

Phoridae: These are small hump-backed flies which belong to the *Diptera*. The larvae generally feed in decaying material but some appear to be parasitic on other insects.

Hymenoptera: An Order of insects with two pairs of membranous wings of which the front pair is the larger. The wings are coupled with a row of interlocking hooklets on the front edge of the hind wings and this allows the fore and hind wings to act as one. The Order includes wasps and ants, which are largely predatory; ichneumonids and chalcids, which are parasitoids (see definition of 'parasitoid'); sawflies, which are plant-feeders and the bees, feeding on pollen and nectar. The majority of species belong to the parasitoid groups. Sawflies, unlike other members of the Order, have no waists.

Ichneumonoides: A group of parasitic *Hymenoptera*. Many members are mainly parasites of larvae of butterflies and moths. Sawfly and beetle larvae are the other major hosts.

Prepupa: A resting stage through which many larvae pass before turning into a pupa. The larvae are usually rather shrunken and deformed during this stage.

Parasitoid: An insect which differs from a true parasite in that it always kills its host. It is really a highly efficient predator which is able to provide a single source of nourishment in which its young can complete their development.

Elytra: The horny front wings of a beetle.

Records of insects, chiefly Sawflies, observed and identified by Andrew Liston during the year at places listed below are with the Records Secretary:

6/5/78 - 19/5/78	Torridon, Wester Ross
3/6/78	Invertrossachs Nature Reserve with ENHS
4/6/78	Cademuir Plantation of Glentress Forest
24/6/78	Eskdalemuir with the ENHS
1/7/78	Bishop Hill with the ENHS
2/7/78	Beecraigs Wood, West Lothian
20/8/78	Cademuir Plantation of Glentress Forest
28/8/78	Leadhills in Lanarkshire

Phoridae (Diptera) as Parasitoids of Sawflies

On 27 March 1978 I collected some cocoons of *Cimbex femoratus* (L.) (a Sawfly) from soil at the bases of birch trees in a wood near Whitadder Reservoir. Four of these cocoons had been vacated by an Ichneumonid, *Opheltes glaucopterosus* (L.). The fifth contained a dead sawfly prepupa and the sixth was found to enclose the shrivelled remains of a *Cimbex* prepupa together with dipterous puparia of what appeared to be Phoridae.

This discovery would appear to be of interest for several reasons. Firstly, it is only recently that the parasitic habit has been recognised as occurring in the Phoridae. The majority of Phorids are associated with organic refuse and it has been stated that the flies only attack diseased or wounded insects and that such occurrences are merely fortuitous (see Colyer and Hammond, 1951: Flies of the British Isles, Warne). Modern authorities tend to acknowledge that many species of Phoridae, especially the genus *Megaselia*, occur as obligate parasitoids in a wide range of healthy insects. Some of the hosts from which Phorids have been recorded are larvae of Lepidoptera, longhorn beetles, crane flies, black flies (*Simulium* sp), scuttle flies (Sciaridae), St Mark's flies (Bibionidae), as well as full grown grasshoppers and ants.

No detailed study on the occurrence of Phorids in the early stages of sawflies has been conducted but 'parasitism' of sawfly prepupae and pupae by Phorids may be a regular happening as the following records show.

Benson (1950), in his Natural History of Sawflies, omits any mention of Phoridae, but Aldrich (1892) describes *Megaselia setacea* and *Phora cimbicis* (the latter is in fact *Diplonevra funebres* Meigen) and records *M. agarici* Lintner all from *Cimbex americana*. The only other record of a Phorid from a sawfly that I know of is *M. ruficornis* Mg. from a pupa of a *Diprion* sp (Hsin 1935).

Mr. K.G.V. Smith, who kindly offered to examine my specimens, and who also supplied the records listed above, informed me that the puparia were probably those of *Megaselia giraudi* Egger (a species that has been reared from a variety of moribund insects) and that there is a record from a '*Cimbex variabilis* cocoon' (= *femoratus*) given in Lundbeck's Diptera Danica Volume on Phoridae but no further details are recorded.

The most puzzling thing about the cocoon I obtained from the Whitadder locality was that the cocoon appeared to be completely intact and bore no signs of insects having emerged from it. In view of this, it may be that the Phorids were trapped after they emerged and later decomposed, only leaving their puparia as evidence of their presence. Certainly, I fail to conceive how they could have penetrated the wall of the sawfly cocoon, for they have no biting mouthparts. If this is so, then one may presume that the adult Phorid made a 'mistake' in ovipositing in the *Cimbex* larva (or cocoon). It obviously needs further more detailed observations to determine exactly how these 'parasitisms' come about.

I am most grateful to Mr. E.C. Pelham-Clinton of the Royal Scottish Museum and Mr. K.G.V. Smith of the British Museum (Natural History) for their interest in the specimens and for the opinions that they offered on them.

A. Liston

References

- Colyer, C.N. and Hammond, C.O. (1951). *Flies of the British Isles*. Warne.
- Benson, R.B. (1950). *Natural History of Sawflies*. *Trans. Soc. Brit. Ent.* 10: 45-142.
- Aldrich, J. (1892). *Canada Ent.* 24: 142-6.
- Lundbeck, W. *Phoridae Diptera Danic Volume* (Pt 6, p 205).
- Hsin, C.S. (1935). *Ztschr. angew. Ent* 22: 253-294.

A Rare Ladybird, *Anatis ocellata* (L.) var. *hebraea* L.,

Found in the Lothians

On 6 November 1977 I made an excursion to Toxside Moss near Mount Lothian. I had intended to search for cocoons of a sawfly (Hym., Symphyta) on the branches of some birches by the edge of the moor. The sawfly, named *Trichiosoma lucorum* (L.) (= *latreillei* Leach), had disappeared from the locality, but I did obtain some long-vacated cocoons. Most of these were covered in lichen, both inside and out, but the last retained the characteristic 'lid' made by the emerging adult insect and also a much thinner encrustation of lichen. In this last cocoon I found two hibernating ladybirds.

One of these was a seven-spot ladybird, but the other was unfamiliar to me. It was of a large size, being about one-and-a-half times the length of a female seven-spot ladybird. The usual dotted pattern on the elytra was modified so that the dots formed longitudinal bars and the specimen presented a striped appearance. After comparing the specimen with illustrations in various textbooks, I concluded that the beetle was a variety of the Eyed ladybird, *Anatis ocellata* (L.). This was confirmed when I compared my specimen with those of *A. ocellata* in the Royal Scottish Museum. These specimens approached mine closely in ground colour but none possessed the peculiarly formed black markings.

I noticed that few of the museum's specimens came from the Lothians. Mr. Pelham-Clinton suggested that the species was not established in the Lothians but might migrate periodically up the east coast. On Mr. Pelham-Clinton's advice I sent a photograph and explanatory letter to Dr. Muggleton of Nottingham University. The following details are drawn from his reply. This specimen is very close to the form known as variety *hebraea* in which all the 'spots' are fused to form longitudinal lines. This form is common in some parts of Asia and according to a paper written by Dobzhansky in 1933 it is the predominant form of *A. ocellata* in the parts of Siberia to the east and north-east of Lake Baikal in the USSR. The form becomes less common towards the west and it appears that it rarely occurs in

Europe. Dr. Muggleton possesses a specimen similar but less extreme, which he found in Delamere Forest, Cheshire, a few years ago. He could not say for certain why such a form should turn up in Scotland but suggested that it might either be produced as the result of a mutation or that it could be present at a low level in the population. It would be interesting if more specimens of this type were obtained in Britain, thus confirming that *hebraea* is established here.

A search on Toxside Moss and in the woods of spruce and pine surrounding Gladhouse Reservoir on 30 April 1978 did not reveal any further specimens of this species, although *C. septempunctata* and *A. decempunctata* were abundant.

If members happen to come across a ladybird that possesses the characteristics of variety *hebraea* set down here, I should be most grateful if they would confine the insect in a matchbox or something similar and inform me of its capture.

A. Liston

Dragonflies

Records of occurrence near Edinburgh

Weather and other commitments limited the number of successful visits paid by members of our small team of enthusiasts, T. Boyd, E. Gillespie and self, to possible and/or known dragonfly breeding areas within range of Edinburgh. Little additional information was obtained. Any 'new' waters or previously visited areas that yielded fresh data are listed below, followed by a table showing our new records.

List of waters visited showing in which 10 km square each is situated

- NS 96 Polkemmet Moor sites A and B
Fauldhouse (ponds associated with old mine workings)
No. 8 pond, No. 7 pond, Blue Waves, Dog Pond
Woodmuir Plantation Forest Pond
- NT 06 Addiewell Ponds (1.6 km east of Seafield Old Shafts, West Lothian)
Morton Reservoir, Morton Burn Reservoir, Selm Muir Reservoir
- NT 25 South-west Gladhouse
- NT 35 North-east Gladhouse
- NT 52 Lindean Reservoir
- NT 42 Long Philip Burn Reservoir
- NT 48 Marl Loch

Species recorded

1. Green Lestes (*Lestes sponsa*)
2. Common Ischnura (*Ischnura elegans*)
3. Large Red Damselfly (*Pyrrhosoma nymphula*)

4. Common Coenagrion (*Coenagrion puella*)
5. Common Blue Damselfly (*Enallagma cyathigerum*)
6. Common Aeshna (*Aeshna juncea*)
7. Black Sympetrum (*Sympetrum scoticum*, formerly *S. danae*)

Table showing species of dragonflies found at the various waters
(new records only)

	1	2	3	4	5	6	7
Polkemmet Moor: Site A						x	x
Site B						x	
Fauldhouse: No. 8 pond		x	x		x	x	
No. 7 pond		x	x		x		
Blue Waves		x	x		x		
Dog Pond		x					
Woodmuir Plantation pond						x	
Addiewell Ponds					x		
Old Shafts		x	x	x			
Morton Reservoir					x		
Morton Burn Reservoir					x		
Selm Muir Reservoir					x		
SW Gladhouse Reservoir		x					
NE Gladhouse Reservoir					x		
Lindean Reservoir		x					
Long Philip Burn Reservoir	x				x		
Marl Loch		x					

Note: For previous records from some of the above and other waters see ENHS Journal 1977, page 19.

The sighting of a dragonfly near water does not imply that that species breeds there. Breeding can be assumed if very large numbers of a species are present but can be proved if mating or egg-laying is witnessed or the nymphs are found, or even their exuvia (cast skins of the nymphs). In this connection the Gladhouse records are of single specimens. Gladhouse is unsuitable for breeding as the water level drops so drastically in summer. In all other records above breeding of the species can safely be assumed and in most cases has been proved. At the Marl Loch in the Aberlady Reserve we have found no nymphs other than *Ischnura elegans*. The *Sympetrum striolatum* recorded in 1977 was a migrant and though other species have been seen in former years there, *Ischnura elegans* appears to be the only regular breeder now. The Tynninghame records of *Ischnura elegans* and *Enallagma cyathigerum*, in 1977, are of few specimens and in the apparent absence of nymphs, these damselflies almost certainly do not breed in the estate ponds. The local breeding pond has not yet been found. Our thanks are due to A. Buckham for information from Lindean Reservoir.

Observations on dragonfly behaviour associated with mating

A male dragonfly is unique among insects in having accessory genitalia on the underside of the second abdominal segment. The actual opening of the sperm ducts is on the underside of the ninth abdominal segment, a more normal position. On a hot sunny August day, at a small pond, a blue damselfly, probably *E. cyathigerum*, the Common

Blue Damselfly, was watched clinging to the outermost tall emergent vegetation about 12.5 cm above water level. Through binoculars it was seen to tuck its abdomen right round underneath until the second last segment was against its second abdominal segment. It then made several thrusting movements. It was obviously a male filling its sperm pouches, a necessary preliminary to mating.

When ready for mating, males of *Aeshna juncea*, the Common Aeshna, fly round and round the edge of the open water, facing the vegetation and looking for a mate. Sometimes a chase develops if a rival comes too near. On one occasion we watched a male *Sympetrum scoticum*, the Black Sympetrum, from its chosen perch on a clump of moss, repeatedly fly up and chase a male *Aeshna juncea* each time it entered the Sympetrum's territory as it was 'doing its rounds'.

While we were watching a female *Aeshna juncea* egg-laying, a searching male was seen to find her. With much wing-rustling he flew in to grip her head with his tail-claspers and as the two flew off in tandem towards the treetops, the male looked for all the world like a skier that had launched off into space, the female being his skis. After an hour a female, perhaps the same, returned and immediately began egg-laying.

Near the edges of their breeding waters, on bushes or tall herbage, we have frequently come upon mating pairs of damselflies. In every case the female, grasped behind the head by the male's tail-claspers, bends her body right round under the male so that the underside of her abdomen is uppermost and the tail-end of her abdomen is pressed against the first two abdominal segments of her partner. In this curious loop formation the male transfers sperms from his sperm pouches into the female's genital opening.

After mating the damselflies fly in tandem, the male still gripping the female behind the head, their bodies parallel and both using their wings. On reaching the breeding water the male acts liberally in a supporting role. While the female lays her eggs the male, still attached, hovers above. *Enallagma cyathigerum* favours the just emergent spikes of *Myriophyllum* spp (Water Milfoil), or the floating leaves of *Potamogeton* spp (Pond-weed) or *Hippuris vulgaris* (Marestail) well out from the water's edge. She lays her eggs under water in slits cut by her saw-like ovipositor, in the tissues of the vegetation. *Pyrrosoma nymphula*, the Large Red Damselfly, we have watched egg-laying under water in the vegetation in the quieter part of a stream as well as in grasses and *Myosotis* spp (Forgetmenots) in ponds. *Lestes sponsa*, the Green Lestes, we have seen egg-laying on the stems of emergent vegetation above water level and not below the water. This type of behaviour is recorded in the literature for the closely related *Lestes Dryas*, the Scarce Green Lestes, but not, so far as we know, for *Lestes sponsa*. At Skinflats, I watched a pair of *Sympetrum scoticum* fly repeatedly over the pond in tandem. Every now and then the male flicked the female down so that the tip of her abdomen hit the floating mats of algae where her eggs were presumably wiped off. *Cordulegaster boltonii*, the Golden Ringed Dragonfly, we have watched egg-laying in the North of Scotland. The female has a long stout ovipositor which she jabs into the moss or mud of shallow runnels of a stream. The male does no supporting job but a prospecting

male may well pick her up and the pair will fly in tandem to nearby bushes to mate. After mating, a female *Aeshna juncea*, like *Cordulegaster boltonii*, returns to the breeding water on her own. *Aeshna juncea* clings to the outermost tall emergent plants, and dipping her abdomen half under the water, lays her eggs in slits cut in the vegetation. We have seen both *Aeshna juncea* and *Enallagma cyathigerum* apparently egg-laying in the bark of submerged lopped-off branches.

The undoubted highlight of our dragonfly watching experiences last summer was totally unexpected. On holiday in the north-west of Scotland my husband's attention was caught by a large dark blue insect. Closer inspection showed it to be a male *Agrion virgo*, the Beautiful Demoiselle, one of Scotland's rarest dragonflies. This magnificent creature has an emerald green abdomen with a metallic sheen and prussian-blue wings which it displays during its courtship. In a short stretch of river no more than 50 yards long there were at least four males and two females of this species as well as two pairs of *Pyrrhosoma nymphula* and at least five *Aeshna juncea*. One male *Agrion virgo* perched on the muddy bank-face of the stream with folded wings, at intervals flicked them open for a second. On vegetation beside the stream another male was seen with its wings touching but raised well above the body. Nearby a pair was mating on the vegetation while a female on her own was egg-laying in the sandy matrix beneath the water while she clung half-submerged to the bank or to a stone.

E.M. Smith

Wall Brown Butterfly (*Lasiommata megera*)

Seen on Berwickshire Coast

In Berwickshire, near Siccar Point, on 5 August 1978 - a warm, still, sunny day - a party of five or six butterflies was seen flying erratically above a grassy cliff by the sea. Two landed briefly on the short bare turf of the headland; there they faced each other, wings closed save for occasional flickers when glimpses of the partially opened wings showed orange uppersides bordered with brown; they proceeded, without touching each other to advance and retreat, wings fluttering, for almost one minute thus giving good opportunities to note the colour and pattern of the underside of their wings; these had a greyish cream ground on which were darker grey speckles and spots. The butterflies were about the size of Meadow Browns. Then they flew off to rejoin the others which had meanwhile been flying about nearby and the party disappeared along the grassy cliff slopes.

The Provisional Distribution Map of Butterflies of the British Isles, BRC 1975, shows pre 1960 records for the Wall Brown in Berwickshire but no recent records.

E. Hamilton

Common Cockchafer or Maybug (*Melolontha melolontha*)

A large beetle flew into a lighted room on the warm evening of 2 June. Its large size and buzzing flight so alarmed the occupants of the room that they beat at it with a newspaper, killing but not destroying the shape of the creature. Subsequent examination showed it to be a Common Cockchafer, its brown elytra were grooved and it was 20 mm long.

(From the Field Guide to the Insects of Britain and Northern Europe - M. Chinery: Maybugs are commonly found in the south but are not common in the north of England or in Scotland. These beetles do much harm to trees and crops by eating foliage and flowers. The fat white larvae are even more destructive; they live underground for three or four years and eat plant roots during that time, particularly cereals and other grasses. It is said that rooks are particularly fond of both adult and larval cockchafers and the larvae are often called rookworms.)

E. Hamilton

REFUSE DISPOSAL PROBLEMS WITH RELATION TO
THE CITY OF EDINBURGH AND ITS WILDLIFE

The matter of refuse disposal is a complex subject and it is not a planning function as such to decide the method or methods of refuse disposal to be adopted in any particular area. However, the impact of refuse disposal on land use planning - its demands for land, its effects on amenities and its possible contribution by way of reclamation of derelict land - means that policy decisions concerning refuse disposal can only properly be taken in full consultation with the Planning Authority.

Many local authorities throughout the country are now finding that refuse disposal is an increasingly significant part of their budgets. New methods, such as incineration, require the commitment of large amounts of capital expenditure for the construction of these plants, which allow for partial reduction in weight and volume of refuse, in particular domestic refuse, leaving an innocuous residue. There is sometimes strong public opposition to planning applications for the use of land for controlled tipping, and the availability of suitable sites, or in many instances their unavailability within economic range to large cities, is now a common problem faced by many authorities. These current problems and their implications to nature conservation interests are discussed with relation to the City of Edinburgh, and consideration is given to some possible long-term solutions.

The recent extended closure of the Powderhall incinerator, through extensive fire damage, has resulted in the tipping of crude refuse for a nine-month period on existing tip sites within the city. The subsequent increased rate in their upfill means that there is now very little spare tipping capacity available within the District. The annual quantity of domestic refuse handled by the City of Edinburgh District Council Cleansing Department is approximately 150,000 tons.

There is a continual need for the establishment of new tipping sites within the District at an economic range from the city. The fact that the proposed contract with the Associated Portland Cement plant at Oxwell Mains, Dunbar (to utilise incinerated residues from Powderhall as a fuel) was rejected by the company on technical grounds further aggravates this problem.

As a result, it is likely in the short-term that there will be increased pressure on certain sites, in particular disused quarries throughout the District and Region for refuse disposal. Abandoned quarries often have great potential as refuges for wildlife in areas of dense urban or intensive agricultural use, and it has been established that some quarries, in particular the flooded quarries, are now sites of considerable local ecological significance within the District and Region.

The local planning authority has a statutory duty to consult with the Civil Aviation Authority when considering sites for the tipping of refuse within a distance of eight miles from an airport, or any of its flight paths. The degree of hazard to aircraft from birds frequenting refuse tips located near airports depends more on the location of tips in relation to aircraft flight paths and to any other local source of attraction to birds, such as an open stretch of water, than to the actual distance of a tip from the airport. Clearly, the intensity of operations at the airport is also a significant factor. Gulls, in particular, frequent refuse tips, and it is not uncommon for them to be seen on tips many miles from the coast. The reported increase in gull populations in Britain in recent years could be linked partly, at any rate, with an increase in the quantity of tipped refuse. The Planning Department also undertakes a thorough site analysis in conjunction with statutory bodies such as the Forth River Purification Board and the Nature Conservancy Council, and with local conservation bodies such as the Lothians Branch of the Scottish Wildlife Trust and recently the Edinburgh Natural History Society. It is important when a significant site of semi-natural interest is threatened that there should be observations by local residents, amenity associations and conservation bodies. It is the final responsibility of our elected representatives to decide these issues at Committee level within the District Council. It is possible in granting planning consents for mineral extraction at existing quarries within the District to consider their suitability, once worked out, for refuse disposal and eventual upfill and restoration. Several sites have been identified as having this potential.

One final matter of concern to all conservationists is the indiscriminate dumping of rubbish, in the countryside, which apart from being unsightly, can also pose a threat to wildlife and livestock. Unfortunately the local authorities have very little control over these matters and rely on members of the public reporting actual instances of illegal dumping, if witnessed, to the police, who may then pursue the matter with court action and prosecution, although this is a rare occurrence.

A more enlightened attitude is required by members of the public, in general, to refuse disposal through more extensive court prosecution and stiffer penalties to offenders. Equally, the local authorities

will, in time, require to reconsider their existing policies and evaluate, for example, the long-term economics and social benefits of refuse recycling, which is obviously an acceptable ecological solution to an existing intractable problem.

G.D.C. Walker
Ecologist
City of Edinburgh District Council
Planning Department

CORSTORPHINE HILL TEN YEARS ON

If long-standing members of the ENHS will turn to their back-copies of the Society Journal, they will find that the 1968 copy of the Newsletter, as it was then titled, devoted eight of its 14 pages to articles on the history, the woods, the mammals, the flora and the insects of Corstorphine Hill.

Changes have undoubtedly taken place since 1968, some of which were foreshadowed then. The pressures of population continue, with new housing developments on all sides, particularly round Clermiston and Hillpark; formerly 'wild' areas within the Royal Scottish Zoological Society's boundaries have been transformed into paddocks; now a new primary school is being built at Craigcrook. Erosion by the passage of many feet has led to an increased exposure of bare rock and ever-widening paths, while accidental fires and deliberate vandalism have resulted in the loss of some trees and a good deal of gorse. But on the credit side, the natural history value of the Hill has been enhanced by the addition to the Park of the area between the Zoo and Beechmount Hospital with a new access point from Corstorphine Road. This south-facing slope contains mainly grassland and gorse, with belts of mature trees which include Lime, Pedunculate Oak, Beech, Sycamore, Horse-chestnut, Scots Pine, Black Poplar and Ash; and smaller species include Holly, Elder, Hawthorn, Rowan and Laburnum. Here, as elsewhere on the Hill, there is a fair amount of natural regeneration, and the official planting programme over the years seems to have had at least qualified success despite thieving and vandalism of young trees. Recently, work under the Job Creation Schemes has greatly improved many of the main paths through the woods.

The botany of the Hill remains much as it was in 1968. I found this year a good colony of the Common Spotted-orchid (fortunately, perhaps, largely in a fenced private field); the Climbing Corydalis is still abundant, and a great variety of common heathland and woodland plants are present, though Primroses have gone and even Wild Hyacinths are less widespread. Of the edible fruits, Raspberries, Brambles and Rosehips are there for the taking, and an addition to the previous list is a single rather poor specimen of the Red-berried Elder.

The mammal populations, being largely nocturnal, appear unaffected by increasing human use of the Hill. Badger setts do not seem to be interfered with, though reports of dead animals on the roads come in from time to time. A visit to the park after a snowfall will clearly show up the tracks of innumerable Rabbits, Voles, Badgers and possibly Fox whose presence is unsuspected by the casual daytime

visitor. My impression is that the number of Grey Squirrels has decreased in recent years, but they may be concentrated in the vicinity of the Zoo where they find easy sources of food.

As for the birds, the number of species recorded remains fairly constant, though one suspects that the breeding success may be diminished. Our late Honorary President, Mr. P.W.G. Gunn, in his 1968 article reminiscing on changes on the Hill in his life-time, mentioned the loss of the Wood-Warbler, but we can still hear its song in the spring of most years. The Whitethroat and Spotted Flycatcher are also still with us, and both Green and Great Spotted Woodpecker, while a pair of Hawfinches have turned up after having been unrecorded here since 1965. And in lighter vein, we are not claiming any records for a pair of Mandarin Duck and a Sulphur-crested cockatoo sighted free-flying in the woods! A Habitat Survey on Corstorphine Hill was completed for the British Trust for Ornithology in 1976 listing a total of 58 species.

The 1968 article on the entomology of the Hill admitted to a degree of ignorance of the locality, so to that extent any information we have gained is a step forward. Some work has been done on the Bumble Bees of Corstorphine Hill, and the 1977 Journal carried a short report on the Moths and Butterflies, but undoubtedly much remains to be recorded.

M. Watson

SEA BUCKTHORN - FRIEND OR FOE?

Hippophaë rhamnoides is native to many parts of coastal Scotland - pollen grains being discovered in debris from the end of the last glaciation; but the Lothian plants' origin is uncertain, and although some Berwickshire spinneys are native, there is no conclusive evidence regarding our local stands. Some introduction was known to have taken place in the middle of the 18th century; but which are the introduced plants and which are native is difficult to determine. What is known is that the spinneys are a great asset to coastal protection by stabilising the sand, and even 'Dutch fences' made out of dead or cut Sea Buckthorn are utilised to aid sand build up. On areas of heavy public pressure, it can be planted to control access owing to its density of growth, and its sharp thorns.

It grows very rapidly, and both male and female plants, which are separate, become sexually mature when very small. The spinneys can also be a stronghold for Rabbits, and if you happen to be a farmer living close by with hungry cattle to feed, or the owner of a golf course, then any Rabbit stronghold will be a threat to the food supply of cattle on the one hand, and a threat to the evenness of greens and fairways on the other. Many other mammals can be found there, too, including a predator of the Rabbit, the Fox. The species is seldom seen; but when walking past a stand of Sea Buckthorn, the unmistakable sweet fox scent is sometimes apparent. The Roe Deer manages to find refuge among the spiny branches, and Hedgehogs have been seen emerging as darkness approaches, and it is highly likely that the species will hibernate the winter months away amidst the protectiveness of the stands.

Other Rabbit predators, the Stoat and the Weasel, are seen here also, and occasionally a Brown Hare bounds into the cover. Brown Rat and Wood Mouse have been sighted, and no doubt the Bank Vole, Common Shrew, and Mole, which are all seen in the vicinity of the spinneys, venture in to gain shelter, or even to hunt. As the Sea Buckthorn attracts many insects, Pipistrelle bats are occasionally seen hawking the leeward side of the bushes. It has been argued that the Rabbits help to control the spread of the Sea Buckthorn by eating the leaves, shoots and bark; but it has also been argued that by keeping the surrounding weeds short, and by making scrapes, which will allow the seeds access to the soil, the Rabbit is in fact a benefit to the progress of the plant.

At least 55 bird species are associated with the Lothian Sea Buckthorn spinneys. Perhaps the bird most abundantly seen is the Fieldfare, which as a species flocks into our local stands to spend much of the winter feeding on the succulent orange berries, the seeds of which pass through the birds to await germination. The finches on the other hand feed on the seeds, and on one occasion over 70 Bramblings were noted. The latter were seen leaving a buckthorn spinney at dawn, and it is not known whether they were feeding or merely roosting unlike the Greenfinches which love the seeds. Blackcaps which are overwintering appear to survive on the berries, and Garden Warblers, Wood Warblers, Willow Warblers, and Sedge Warblers enjoy the summer insect life. Occasionally, a Chiffchaff or a Reed Warbler may be seen, as well as a Lesser Whitethroat. The Spotted and the Pied Flycatchers make full use of the shelter to catch an easy meal. Apart from supplying an abundance of food, the Sea Buckthorn also supplies necessary cover for nesting. Because of the wealth of small bird life frequenting the bushes, Merlins and Sparrowhawks have a ready food supply, and occasionally a Kestrel can be seen hovering over the perimeter. The spinneys afford food and shelter for many migrant species during their long hazardous journeys, and occasionally less common species like the Golden Oriole and the Black Redstart occur.

Many people have to work directly with Sea Buckthorn whether it is volunteers assisting in making the 'Dutch fences' or golf course employees cutting rides to gain access to Rabbit warrens; and they know just how thorny the plant is, and how tough the root system is. Is it a friend or foe to them? The local landowners know how quickly it spreads, and how much it plays host to 'vermin'. Is it friend or foe to them? The birds and mammals breed, feed and shelter amidst it. Is it friend or foe to them? Many other plant species which used to grow in that area were smothered by the dominant buckthorn. Is it friend or foe to them? The answer to all these questions is obvious in each case; so the ultimate answer must be: *Hippophaë rhamnoides* is both friend and foe!

R.G. Nisbet

SOME NOTES ON NATURAL HISTORY

Earth Star (*Geastrum triplex*)

Although Earth Stars are not common in Scotland, observations on the appearance of them in the Lothians have been recorded in previous Journals. They include the following:

In 1973 at Tynninghame by Mrs. E.M. Smith (see 1973 Journal, page 29).

In February 1976 remains were seen in the wood at Yellowcraig, East Lothian, by Miss Helen Jackson (see 1976 Journal, page 17).

In October 1976 at Linnmill, 2.4 km west of South Queensferry (see 1977 Journal, page 21) one fruiting body was seen by J. Carlyle.

In 1977 about 100 fruiting bodies were counted by Mrs. E.M. Smith at Tynninghame at the same station as Earth Stars were seen in 1973 (see 1977 Journal, page 21).

R. Weatherhead adds a record for 1975. He writes:

"While surveying for the SWT Habitat Survey the fungus Earth Star was recorded on a wooded bank of the River Tyne, near East Linton, on 20.9.75."

Questions - of Adders and Eels

I have seen adders on heather moors in Skye and Easter Ross. The colour of their skins has always been black or dark brown. While walking, this July near Wrotham, Kent, round the edge of a cornfield on green lush grass, I saw coiled in the grass a vivid green snake which I thought was a grass snake and my first sighting of one. I was thinking of picking it up when I noticed the flat head and zig-zag markings on its back and rapidly I changed my mind. The snake quietly slithered into the undergrowth.

Question: Do adders change the colour of their skins according to the habitat in which they live?

In the lawn at the back of Hopetoun House, South Queensferry, there is a man-made pond, with vertical stone sides, size approximately 65 yards by 35 yards.

The distance from the top of the banking to the water is 2.25 feet, the depth of the water is just over 1.33 feet. At one end of the pond is a meshed metal grating shaped , reaching from water level to the top of the bank.

On 26 May 1978 I counted the eels in the pond, some of them I reckoned to be 2.50 feet long and thick with it. It is likely that they were on their migratory journey overland from up country to the River Forth. On 30 May there were no eels in the pond. Three herons were seen on the bank of the pond early one morning.

Questions: What happened to the eels?
 How did they get out of the pond?
 Can a heron swallow 2.50 feet of thick eel?
 Can an eel jump 2.25 feet?
 Did they squirm up the mesh grating?
 Why did they not use the Midhope Burn that
 runs into the sea a few hundred yards from
 the pond?

Anyway, to the survivors safe journey to the Sargasso Sea.

P.S. On the 23 June, at the mouth of Midhope Burn, among the stones and boulders at high water mark, I was able to show a party of school-children, elvers of various sizes.

J. Carlyle

Plants seen at Imperial Dock, Leith on 29 October 1978

The grain silo at Imperial Dock appeared to be the only one of the three at Leith where any plants of interest had recolonised the surrounding ground after the late summer devastation by weed killer. Here, amidst spilt maize grains, Ragweed (*Ambrosia artemisiifolia*) (CTW p. 816) was flourishing. This attractive plant, which is rather like our familiar Mugwort (*Artemisia vulgaris*), comes from North America where it is a major cause of hayfever. Although at first glance the long flower-spike resembles Mugwort, the flower heads differ in being composed entirely of male flowers, producing a large concentration of pollen. The smaller number of female flowers are grouped below in the axils of the upper leaves. This segregation of the sexes within the same plant is an interesting arrangement. In Britain it occurs mainly in coniferous and catkin-bearing trees, and in sedges, but is not usual in herbaceous plants. In monoecious ('single house') plants the flowers or composite flower heads are normally hermaphrodite, or if the sexes are divided they tend to be banished to separate plants (dioecious: 'two houses'), for example Holly, Red Campion, Stinging Nettle.

On more open ground, nearby, *Bromus unioloides* (CTW p. 1154), a handsome grass from South America had appeared. There were also several plants of Pigweed (*Amaranthus retroflexus*) (CTW p. 271), another casual from North America, which seems to occur fairly frequently in the dock area.

A small clump of Green Bristle-grass (*Setaria viridis*) (CTW p. 1191) was surviving amongst commoner grasses in the corner of a car park near Chancelot Mills.

E.H. Jackson

CTW - Clapham, Tutin and Warburg, "Flora of the British Isles",
 Second Edition.

Note: The terms 'monoecious' and 'dioecious' are derived from the Greek, monos - single, alone; di - twice; aikos - a house.

Short-eared Owls at Musselburgh

On the outing to the Musselburgh Lagoons on 25 November it was with considerable interest that five Short-eared Owls were seen. Taking into consideration the time of year, these could have been birds on migration. It is probable that their main food source was the Short-tailed or Field Vole.

Rough tussocky grass, undisturbed by grazing animals, now covers those lagoons that have been filled in, providing an ideal habitat for *Microtus agrestis*. The Bank Vole, with its preference for woods and hedgerows and dislike of wide open spaces, would not move into such an area.

M. agrestis starts breeding in March, having about six litters of four or five by the end of September, so under favourable conditions there can be a build-up to a very large population by the autumn. The owls had therefore taken over a territory which could be expected to have a plentiful source of food, though with the end of the breeding season and the onset of winter weather the density of the vole population would probably fall quite rapidly.

The Short-eared Owls had been seen during the previous week and at least three were still there a week after our visit. While we were there, three of the owls were seen repeatedly flying low over a dog, trying to drive it out of their territory.

E. Farquharson

Great Tit on Crown Imperial Lily

During April and May 1978, in an Eskbank garden a Great Tit was several times seen to sip the sweet droplets of liquid to be found in the down hanging orange flowers of the Crown Imperial Lily (*Fritillaria imperialis*). In the 1974 Journal a Coal Tit's behaviour was described in trying to reach the base of these Lily flowers in the same garden; being a small bird it had to fly, in the manner of a humming bird, more or less on the spot, with rapidly beating wings, to attain its objective. The larger and stouter Great Tit, on the other hand, was able to drink the fluid by perching squarely on the thick stiff stem of the Lily plant, stretching its beak upwards and inwards to the droplets at the base of the down-turned flowers. While doing so, unlike the Coal Tit, it was silent.

E. Hamilton

Wren's discovery of food supply in vacated tit nesting box

On a cool windy day in mid July the observer's attention was drawn to an old Crab Apple tree in an Eskbank garden by the sudden low and continued churring notes of a wren. The bird was seen to enter a vacated Blue Tit nesting box about 7 m from the ground, quickly emerge and fly to the base of a thicket of nearby herbaceous plants. It returned joined by a second wren and for the next hour,

silently, both birds kept up a shuttle service from Crab Apple tree to plants, entering and leaving the nest box which contained the mossy remains of a Blue Tit's nest.

When seen through 8 x 35 binoculars at a distance of about 14 m the birds were seen to have insect material in their beaks which they sometimes ate themselves while perched on the rim of the small nest hole; occasionally the food collecting wrens would alight briefly on the paved path below the tree and there pause while taking a firmer grip of their wriggling beakfuls before flying to the nearby plants where, as will have been guessed, there were fledgling wrens, three in number, with bright yellow gapes. Later examination of the contents of the nest box revealed a still plentiful supply of earwigs and fleas.

E. Hamilton

A Sea-going Wagtail

While watching seabirds at Cramond on a very frosty day in November, I was surprised to see a Grey Wagtail perching very precariously on a small 'island' of weed and small twigs, which was floating on the sea near the breakwater, and evidently obtaining some food items from them. It was also interesting to note that each time this Wagtail attempted to land on the breakwater, it was chased by a Pied Wagtail, and had to fly back to its salt water meal.

M. Mowat

In two gardens - Inverleith Row

At the end of October 1977, branches of holly, heavily laden with berries, were brought to Edinburgh from Deeside, Aberdeenshire, with Christmas decoration in mind.

They were kept in water in a large earthenware jar, and kept till long after Christmas. Gradually the leaves fell off, but the berries continued to be very decorative. By February, however, it was felt that it was time for them to be put out, but it seemed a pity for such a potential attraction to birds to go on the refuse bin. Accordingly, the branches were put on the concrete paving outside the sitting room window of a garden flat in North Edinburgh, just behind a busy bus route. By next day three Redwings were observed to be enjoying this new food supply and within a few hours not a berry was left, where so recently there had been perhaps a hundred.

During the week before that, the garden next door in Inverleith Row had a visit from a small party of Long-tailed Tits. They were seen on two mornings among shrubs by the occupant of the adjoining flat.

D.M. Chrystal

Some thoughts on a familiar wild flower

On the outing to Corbie Linn and Linglie Glen on 5 August, I could not fail to notice the lovely array of Scottish Bluebells or Harebells (*Campanula rotundifolia*), which were growing in profusion on the hillsides and bankings - their small heads gently swaying in the summer breeze, with a charm all of their own. Have you perhaps noticed how quickly this little flower wilts when brought indoors? Surely it is nature's own way of trying to tell us to leave the beauty of nature alone to bedeck and enhance the countryside for others to enjoy. Although this charming flower has graced our hillsides for generations, let us not take it too much for granted. During summer or early autumn, if we are out and about on the hillsides, let us stop awhile and observe this truly beautiful flower.

Bluebell, Harebell, Fairybell or Clochette, whatever title you prefer to give this delicate little bellflower, let us make sure it is always around in years to come for others to enjoy on their country walks and rambles.

P.S. After writing the above note on bluebells for the Journal, I was especially delighted to come across a small clump of WHITE *Campanula rotundifolia* growing in the middle of the lower hill track, nearing Traquair village. My companion and I stopped to inspect the flowers and we found that the flower-bells were completely white - not a trace of blue to be seen. I would be interested to learn if anyone else came across this small clump of white *Campanula rotundifolia* on the excursion on 26 August from Yarrowford to Traquair.

A.M. Gillon

FURTHER OBSERVATIONS MADE DURING 1978

19.4.78 Herd of Sika Deer (five hinds, eight stags) seen on the Dawyck Estate at the Scrape. E.F.

According to Whitehead (The Deer of Great Britain and Ireland 1964) Japanese Sika Deer escaped from Dawyck Park in 1912. Although free to roam anywhere, the deer keep mainly to the Dawyck Estate, sheltering in the woods in the day time and feeding on the moors in the evening.

3.6.78 The most beautiful insect which we saw on the outing to Invertrossachs Nature Reserve was a Pearl-bordered Fritillary butterfly (*Clossiana euphrosyne*). One of these was captured and its markings much admired before it was released. Its larvae, in common with most of the other Fritillaries, feed on Dog Violet. A.D.L.

14.6.78 Some very good examples of the bracket fungus, Dryad's Saddle (*Polyporus squamosus*) and the Sulphur Polypore (*Grifola sulphurea*) were seen in Roslin Glen. M.W.

8.7.78 Red Squirrels seen at Binning Wood, near Whitekirk, East Lothian E.F.

8.7.78 Investigating a conspicuous pale-flowered Woundwort on a roadside verge near East Linton, I discovered that although the flowers resembled those of Marsh Woundwort (*Stachys palustris*) the leaves were like those of Hedge Woundwort (*S. sylvatica*) which was growing nearby.

I supposed it to be a pale form of Hedge Woundwort until, a couple of weeks later, a similar plant at Corehouse Nature Reserve was demonstrated to be a hybrid between the two (*S. x ambibua*). Returning to East Linton on 1 October to check up on my specimen I found that the verge had been mown but in the ditch, with some Hedge Woundwort, was a small plant of Marsh Woundwort. Apparently the hybrid occurs quite commonly when both parents are present. E.H.J.

5. 8.78 A large patch of Bog Asphodel (*Narthecium ossifragum*) was seen at Linglie Glen on the Society's outing. Within a few yards of the plant members found a young Curlew sitting quietly among the heather. The young bird was very trusting and allowed members of the group to take pictures of it (at a safe distance - not to disturb the bird in any way). A.M.G.

19. 8.78 The highlight of the afternoon on the Aberlady outing was a dune slack thickly covered with flowers of Grass-of-Parnassus at their best. M.W.

20. 8.78 Large numbers of Wood Wasps or Horntails (*Urocerus gigas*) were flying in Cademuir Plantation of Glentress Forest. Seven specimens were caught in quarter of an hour in one spot while five others were found ovipositing in an exposed length of Larch root only 75 cm long. Perhaps the abundance of Horntails could have been due to the apparent absence of *Rhyssa persuasoria* (the parasite of *U. gigas*). A.D.L.

Note: *Rhyssa persuasoria* is an Ichneumonid (see page 25), the largest found in Britain (see 1977 Journal, page 43).

26. 8.78 A caterpillar of the Emperor Moth was found on a hill-track path on the outing to Minch Moor and Traquair House. It was later given to two young enthusiasts who took it home with them. They quickly found a large jar for the reluctant little caterpillar and heather and hawthorn leaves were duly placed inside. Next morning, to their surprise, they found that it had spun its silken cocoon.

On the same outing we saw the Red Elder (*Sambucus racemosa*) near Traquair village; Traveller's-joy (*Clematis vitalba*) growing over a wooden fence before the cross roads which leads to Traquair House and Ivy-leaved Toadflax (*Cymbalaria muralis*) growing on an old wall in the same area. A.M.G.

17. 9.78 On the coastline from Seahouses to Craster, Autumn Gentian (*Gentianella amarella*) was plentiful. E.H.

4.10.78 On a sunny windy afternoon three members saw a Kingfisher fly up the Edgerhope Burn. C.S.

7.10.78 On the outing at Pressmennan a Hen Harrier was twice observed above the woodland fringing the lake. C.P.

8.11.78 While walking in Dalkeith Old Wood at lunchtime I observed a female Sparrow Hawk take a pigeon. On disturbing it, and sending it off, some minutes later I found that the pigeon was still alive. Somewhat terrified, it hobbled slowly away. The hawk had plucked a fair number of feathers from it. There were no obvious signs of bleeding, although I did not pick the bird up. M.R.

13.12.78 Near Abercorn Church, Hopetoun, over 50 Lesser Periwinkle (*Vinca minor*) blooms were seen. C.S.

EXCURSIONS 1978

Key for excursions: *B* - Botany, *E* - Entomology, *f* - fungi, *Fb* - Fish biology, *Ff* - Freshwater fauna, *G* - General, *Ge* - Geology, *IBC* - Island Bird Count, *Lh* - Local history, *O* - Ornithology, *S* - Shore.

<u>On Saturdays and at Weekends</u>			<u>Leader</u>
21 Jan	Pentland Circuit from Carlops	<i>G</i>	Miss F. Howie
18 Feb	John Muir Country Park	<i>G</i>	Mrs. M. Wood
18 Mar	River Walk, Peebles	<i>G</i>	Mr. W. Clunie
15 Apr	Hill Walk Romanno to Shiplaw	<i>G</i>	Mrs. H. Miller
22 Apr	Oatridge Farm	<i>G</i>	Mr. D. Rose
29 Apr	Tynninghame	<i>S</i>	Dr. S. Smith
6 May	River Tyne and Preston Mill	<i>O</i>	Mr. W. Clunie
13 May	Glen Sax and Hundleshope Heights	<i>G</i>	Mr. D. Jones
19-22 May	Ayrshire Weekend	<i>G</i>	Mrs. E. Farquharson
27 May	Linlithgow Walk	<i>G</i>	Mrs. E. Farquharson
3 Jun	Invertrossachs Nature Reserve	<i>O/B</i>	Miss M. Mowat
10 Jun	Crook of Devon Fish Farm and Kinross House	<i>Fb/Lh</i>	Mr. C. Pountain
17 Jun	Craigleith	<i>IBC</i>	Mr. R.W.J. Smith
	Aberlady (with Dundee Naturalists)	<i>O</i>	Miss M. Mowat
24 Jun	Eskdalemuir	<i>O/G</i>	Mr. A. Village
1 Jul	Bishop Hill (with Perth Society of Natural Science)	<i>B</i>	Dr. R. Begg
8 Jul	Belhaven Bay	<i>Ge/B</i>	Dr. J. Miller
15 Jul	Lilliesleaf to Hawick	<i>B</i>	Dr. M. Braithwaite
22 Jul	Seacliff Bay. Barbecue	<i>E</i>	Mr. G. Evans
29 Jul	Vogrie	<i>E</i>	Dr. A. Sommerville
5 Aug	Corbie Linn and Linglie Glen	<i>G</i>	Mr. A. Smith
12 Aug	Bemersyde Moss and Whitrig Bog	<i>Ge/Lh</i>	Mr. J. Forsyth
19 Aug	Aberlady	<i>O</i>	Mrs. M. Watson
26 Aug	Minch Moor and Traquair House	<i>G/Lh</i>	Mrs. V. McFarland
2 Sep	Dalmeny	<i>G</i>	Mr. J. Carlyle
9 Sep	Red Moss and Pentland Walk	<i>B/G</i>	Mr. G. Bell
15-18 Sep	Northumberland Weekend	<i>G</i>	Mrs. S. Gray
23 Sep	Bush Estate (with Botanical Society of Edinburgh)	<i>f</i>	Dr. P.A. Mason
30 Sep	Corehouse (with Hamilton Natural History Society)	<i>f</i>	Mr. R. Hunter
7 Sep	Pressmennan	<i>B/f</i>	Miss J. Raeburn
28 Oct	Pentland Walk from Balerno	<i>G</i>	Mr. & Mrs. C. Warren
25 Nov	Lagoons and Kilspindie	<i>O</i>	Mr. C. Pountain
26 Dec	Coast Walk. Sausage Sizzle	<i>G</i>	-

Informal excursions: In addition several informal excursions took place on Saturdays during the winter season.

Evening excursionsLeader

10 May	Holyrood Park	G	Mr. G. Bell
17 May	Hermitage of Braid	G	Miss M. Mowat
24 May	Cramond Brig	B	Mr. J. Carlyle
31 May	Union Canal	Ff	(Mrs. E. Smith (Mrs. A. Gillespie
7 Jun	Hopetoun Estate	O/B	Mr. C.P. Rawcliffe
14 Jun	Roslin - Introduction to Bird Song	O	Mrs. M. Watson
	Lamb and Fidra	IBC	Mr. R.W.J. Smith
21 Jun	Bawsinch	G	Mr. C. McLean
28 Jun	Balerno Walk	G	Mr. C.P. Rawcliffe
5 Jul	Cramond Walk	G	Mr. G. Reynolds
12 Jul	Pentland Hilltops	G	Mr. W. Clunie
19 Jul	Canal and Riccarton Walk	G	Mrs. E. Farquharson
26 Jul	Water of Leith Walk	G	Mrs. C. Stewart
2 Aug	Fairmilehead Walk	G	Mr. J. Young
9 Aug	Lagoons	O	Mr. C. Pountain
27 Sept	Conifer Lecture	B	Mr. P. Woods

REPORTS AND EXTRACTS FROM REPORTSOuting to John Muir Country Park - 18 February 1978

On rounding the Point of Sandy Hurst we saw the Snow Bunting on the edge of the salt marsh. It was feeding with a flock of smaller birds which we were able to approach to within about four yards.

The Snow Bunting was noticeably larger than the other birds which were linnet-like but definitely not of linnet colouring. The upper parts of the latter were brown with very dark brown striations; their under parts were buff but highly streaked on the breast. They had noticeably light yellow bills. They rose and soared in flight when we got too close to them but whirled and settled down again not too far off. We concluded that they must be Twites despite the fact that we could not distinguish any with a pink rump. They made a charming twittering sound in flight.

G.M. Wood

Visit to Oatridge Agricultural College - 22 April 1978

On Saturday, 22 April, the Society visited Oatridge Agricultural College, near Uphall. Twenty-four members attended and thoroughly enjoyed their visit on this lovely spring day under the leadership of the College Vice-Principal, David Rose.

We spent the first half-hour at the College laboratory where we were shown specimens of the various insects and worms which are the scourge of cattle, pigs and sheep.

On proceeding to the farm we first looked at the pig unit. This contained 60 breeding Large White x Landrace sows. Two litters are produced each year with maybe nine to ten piglets per litter. The unit produces 1,000 pigs per year. It carries three pure boars.

We timed our visit to the sheep byre perfectly. A ewe had just given birth to a lamb ten minutes before we arrived, yet as we admired this tiny lamb the ewe obliged once again and a lamb was born before our eyes. The ewes were cross bred, served by Suffolk rams. Later in the day we looked at Blackface ewes that had spent three or four years on the northern mountains and having been purchased by the College were destined to spend their later years at a somewhat lower level. The farm carries approximately 500 ewes.

Next came the bulls - a fine Lincolnshire Red and a somewhat lively Friesian. We were then shown the milking herd almost completely comprised of Friesians giving approximately 1000 gallons of milk per year. The store cattle enabled us to brush up our knowledge of the breeds for they were a mixed but very healthy lot. Our visit to the farm came to an end with a look at the calves. They were eight to ten weeks old and the suckled calves were in a separate section from those that had been hand reared.

A circular walk which took in Binnie Tail and a climb up Binnie Craig ended a most interesting and informative day - a happy start to our 1978 summer excursion programme.

C. Pountain

A visit to Tynninghame - 29 April 1978

Members of the Society visited Tynninghame on Saturday 29 April under the leadership of Dr. Shelagh Smith. This really was a most enjoyable and informative excursion. We saw so much of interest.

Molluscs provided the main interest - quite naturally with Dr. Smith leading us. We examined three different habitats. In the morning we looked at the fringe woodlands and the salt marsh. After lunch we concentrated on the rock pools.

The snail species observed included, Garlic, Discus, Glass, Slippery, Black-lipped, White-lipped, Garden, Cellar, Strawberry, Wrinkled and the Laver snail on which Shelduck feed.

We were shown the aptly named Hedgehog slug, and other slugs seen included the Limapontia, the Black slug and the Grey and Dusky slugs.

In the afternoon shells abounded on the shore and in the rock pools. Apart from commoner species we were shown two interesting limpets, the Blue-ringed found in a seaweed holdfast and the Tortoise-shell. We saw both the Grey and Bristled Coat of Mails and also the Pullet Carpet shell. We also saw the eggs of both the Common and Dog Whelks.

The 'unusual' always provides an added bonus on this type of excursion - for one never really knows what strange object one may suddenly be confronted with. Even our leader was somewhat surprised and delighted to find a sea-slug - a species not often seen in low water. Dr. Smith also passed round a somewhat evil smelling Lump sucker - a black fish approximately 46 cm long, very aptly named with its sucker

sufficiently preserved for us to realise how effective a hold it must have. We saw a Sea-lemon which within minutes was joined in our bucket by a prawn and before these two were returned to the sea they had been joined by an excellent example of Dead Men's Fingers or Soft Coral. Common Starfish and Brittle-Stars, Sea Anemones and various Crabs were observed.

Dr. Smith told us about the marine bristle or segmented worms that were present, Amphitrite with its tube of mucus, and the more active Ragworm and Scale worm. We were shown the holes of Lugworm in the sand.

Finally, it was time for us to return home - many of us reeking of lumpsucker, all of us well content after this great day at Tynninghame.

C. Pountain

Ayr Weekend - 20-22 May 1976

The May weekend, based on Ayr, was a little marred by poor visibility due to sea fog. During the day spent at Culzean we had hoped to see Ailsa Craig and across the Firth of Clyde. Nevertheless, it was a beautiful day locally and the morning was spent on a tour of part of the grounds with the Assistant Warden. In the afternoon, members were free to explore the grounds and shore in greater detail on their own as well as visit the Castle, the formal gardens and the Museum. Camellias and bamboos were growing happily in the kinder climate on the West, and chiffchaffs were singing everywhere.

Only a few of the Society had visited Ailsa Craig before and it made interesting comparison with the Bass Rock. A heavy swell the previous day had prevented any landings, but we were able to land on the Sunday, though with some difficulty. Ailsa Craig remained out of sight in the fog until we were close in, so, inevitably, after the stiff climb to the top, longer and steeper than on the Bass, we had no views of the Firth of Clyde nor of the coastline round Culzean. We had hoped to see the dark volcanic rock on which the Castle had been built, with Old Red Sandstone lying to the north which was quarried to supply the building stone for the Castle.

Although very spectacular it was disconcerting to see the slopes of Ailsa Craig a sheet of blue from Bluebells which we are more accustomed to seeing in woodland.

Ailsa Craig supports far more Gannets than the Bass Rock but the Gannetry is rather inaccessible, the birds using the rock faces rather than the upper slopes so the true size of the colony can be appreciated only when seen from the sea.

On Monday, we drove from Ayr to Loch Doon through Patna, Waterside and Dalmellington, an approach route which is far from inspiring to say the least, but once off the main road one is into attractive countryside. Although large areas round Loch Doon have been planted with conifers, much is still hill sheep farmland. On our walk from Doon Castle to Loch Riecawr, the Merrick Hills and

Mullwharchar lay to the south, the area around which controversy rages as to its suitability for the safe underground disposal of nuclear waste.

Two accounts of the visit to Ailsa Craig

The sea was calm but a heavy mist hung over the Clyde as two motor boats carrying the maximum permitted number of 12 each, started from Girvan. Ailsa Craig lies some ten miles off-shore and it took nearly two hours before we landed on the jetty near the lighthouse.

The party started up the steep track to the ruined castle perched 300 ft above the shore. Little is known about the castle but it dates from the early 16th century. The Gannetry lies on the cliffs on the west side of the island, so the 1100 ft summit ridge has to be scaled. The Herring and Black-backed Gulls protested loudly as we invaded their nesting territory.

The island is composed of micro-granite with Riebekite formed as a volcanic plug. This is very suitable for curling stones and many were exported to Canada where they are known as 'Ailsas'. Unfortunately, this industry is now dead, and the stones come from Wales.

On the journey back two large sharks with a baby were seen, then one of the boats had engine trouble and had to be taken in tow by the other.

K.W. Sanderson

On Sunday, 21 May members embarked at Girvan on the 'Dainty Lady' and the 'Leonora' bound for Ailsa Craig. There were low clouds and a slight fog so we could see nothing of the island from Girvan and we had sailed a good part of ten miles before the outline of 'Paddy's milestone' loomed up in front of us. As we came closer into the island we wondered at seeing a blue haze on many of the small grassy patches of land - even spilling down on to the scree. When we landed we found to our amazement that the blue was caused by Wild Hyacinth or Bluebell (*Endymion non-scriptus*) growing in abundance on this exposed position.

Some of the party followed the steep rough track up to the conical top of the island, (1114 ft above sea level) others made their way to the western cliffs to see the Gannetry. On the way up the rock we saw signs of a large rabbit population. There are two springs on the island giving rise to lush pockets of Marsh Marigold (*Caltha palustris*), Sea Campion (*Silene maritima*) and Red Campion (*Silene dioica*) were flourishing. We also found Marsh Pennywort (*Hydrocotyle vulgaris*).

Before leaving for Girvan the boatman took us round the island by sea to enable us to view the nesting sea birds on the ledges. The hard igneous rock rising steeply from the water in a series of rough columns is an ideal nesting site for Gannets, Kittiwakes, Guillemots, Razorbills and Fulmar.

We were not without excitement on our return journey as one of the boats developed engine trouble and had to be towed part of the way.

We were delighted at seeing a pair of basking sharks with a young one quite close to the boats, seemingly unaware of us.

A list of birds seen on the visit has been given to the Records Secretary.

B. Gordon

Loch Doon

Loch Doon was used as a seaplane base in the 1914-18 War. In 1935-36 a hydro-electric scheme caused the level of the water to be raised, so Loch Doon Castle which was on an island in the middle of the loch was taken stone by stone and rebuilt on the west shore of the loch. The 13th century castle, said to have been built by Bruce, is unusual in being polygonal in plan. It is built of ashlar - square hewn stone. Besieged by the English unsuccessfully in 1305, it was destroyed by James V when trying to end the power of his nobles.

Extract from 'Prehistoric Man in Ayrshire' by John Smith, 1895: "Loch Doon was anciently called Loch Balloch. When the waters of Loch Doon were lowered at one time by cutting away a bit of the rocky barrier at its north end, several canoes were got in the loch near the castle. In one of them, as the writer of the New Statistical Account of the parish tells, there were got an oaken war club and a battle axe. Two of the canoes have been preserved in a pond at the head of Glen Ness. They have all been made out of single oak trees, one of them being 23 feet long and 30 inches in depth by 33 inches in breadth. A rich diatom deposit occurs under peat in the bottom of the loch."

I. Maclean

Visit to Invertrossachs Nature Reserve - near Callander - 3 June 1978 (Leader, Miss M. Mowat)

The main party followed two nature trails, provided by the management of the Reserve. Other members walked to Loch Dunkie. Some members also paid a visit to the Mill Dam, where there is an observation hide.

Over 100 flowering plants and ferns, 40 birds and a large number of insects, including two scarce Sawflies - the small Sawfly, *Brachythops wuestneii* (Konow), and the large wasp-like Sawfly, *Tenthredo maculata* (Geoffroy) - were recorded. Copies of the lists have been sent to the Manager of Invertrossachs Nature Reserve, at his request, as well as being lodged with the Records Secretary.

Recorders on the outing were:

Birds	- M. Mowat
Flowering plants and ferns	- M. Thomson, B. Warland and M. Woods
Insects	- A. Liston

The Reserve is very rich in Ferns and overleaf is a list of those recorded on 3 June 1978.

<i>Asplenium ruta-muraria</i>	Wall-rue
<i>A. trichomanes</i>	Maidenhair Spleenwort
<i>Athyrium filix-femina</i>	Lady-fern
<i>Blechnum spicant</i>	Hard Fern
<i>Cystopteris fragilis</i>	Brittle Bladder-fern
<i>Dryopteris austriaca</i>	Common Buckler-fern
(was <i>D. dilatata</i>)	
<i>D. filix-mas</i>	Male-fern
<i>Gymnocarpium dryopteris</i>	Oak Fern
(was <i>Thelypteris dryopteris</i>)	
<i>Phegopteris connectilis</i>	Beech Fern
(was <i>Thelypteris phegopteris</i>)	
<i>Pteridium aquilinum</i>	Bracken
<i>Thelypteris limbosperma</i>	Lemon-scented Fern
(was <i>T. oreopteris</i>)	

Introduction to bird song at Roslin - 14 June 1978

Ideally, the bird song outing might well be two to three weeks earlier in the year. By mid-June many species are too busy feeding young to be singing. It was noticeable that all the Tits were missing and even Blackbird and Wren and Willow Warbler were only sporadic in song. On the other hand, this date gives the advantage of a long evening.

M. Watson

Outing to Bawsinch - 21 June 1978 (Leader, Colin McLean)

From Duddingston Church the route followed the road to the gate of Bawsinch, thence to the Hide, then round the cleared area, past the ponds and back to the gate.

Birds seen or heard: Mallard (with young); Tufted Duck (with young); Pochard; Greylag Goose (with young); Mute Swan (with young); Coot (with young); Lesser Black-backed Gull; Herring Gull; Swift; House Martin; Sand Martin; Wren (heard); Starling; House Sparrow.

Although this was primarily an ornithological outing, members were shown the Hop plant (*Humulus lupulus*) which has grown on the Reserve.

After the visit to the hide, Mr. McLean showed the party round the ground which the SWT had cleared, and explained that a tree of each British species has been planted. He also pointed out the four ponds which had been excavated, in which Minnows, Sticklebacks and Water Voles had already established themselves. The Trust has also introduced several plants to the ponds. (If the weather had permitted, it would have been interesting to discuss whether this is a wise policy, or whether the 'native' plants should have been allowed to colonise the ponds).

M. Mowat

Outing to Eskdalemuir - 24 June 1978

After arrival at the centre we were addressed by the Warden on Reserve Management (see the report of the talk by Mr. Ronnie Rose, Wildlife Officer for the Economic Forestry Group at Eskdalemuir in the 1977 Journal, page 4). Andy Village then showed us the radio receiver equipment used in his research on kestrels.

In the afternoon we went on to the hillside to examine the seismological equipment used in the connection with earthquake recording and to be shown the young of Long-eared Owl and Barn Owl.

Later on, in a wood not far from the roadside, we were shown the young of Kestrel.

C. Pountain

Joint Meeting with Perthshire Society for Natural Sciences
at Bishop Hill - 1 July 1978

Bishop Hill rises steeply behind the north shore of Loch Leven and reaches a height of 1500 feet at the western end of the Lomond range. The top is an almost featureless plateau about 1.5 miles long and 0.5 miles wide with a vegetation of Heather (*Calluna vulgaris*), Bilberry or Whortleberry (*Vaccinium myrtillus*), and Mat-grass (*Nardus stricta*), but there are also limestone outcrops, steep crags on the southern ridge, and a series of clear streams which emerge from cracks in the rock face and run steeply down to enter Loch Leven. The mineral contents of this water have caused it to be used medicinally for hundreds of years at the well from which Scotlandwell takes its name. Legend has it that Robert the Bruce was cured of leprosy here. There is a rich variety of flora in the wet flushes and the worked out quarries on the hill. On a fine day there are also extensive views south to Loch Leven and the Cleish Hills, westward to Ben Lomond area and northward as far as the Grampians, not to mention the gliders ascending from Portmoak airfield below.

Unfortunately, the outing was not held on a fine day and the 22 people who joined it climbed directly into the low cloud covering the top 200 ft. A splinter group accompanied Dr. Rosalind Smith to Kinneston crags to find Bloody Cranesbill (*Geranium sanguineum*), and navigating thereafter to a quarry to rejoin the main party which did not turn up, decided that conditions were too bad to explore the area further, and came down. Meantime the rest, after inspecting a wet flush, failed to locate the quarry and returned to the ridge on a compass bearing. After lunch, with visibility still at about 10 yards, we proceed north east and finally reached 'Carlin' Maggie', a free standing rock pillar which looked particularly large and impressive in the mist. At this point the weather cleared, though the rocks were too wet to search for Hairy Rock-cress (*Arabis hirsuta*) and Green Spleenwort (*Asplenium viride*) known to grow there. Thereafter, we made a leisurely descent and had a pleasant walk back along the foot-path above Kinnesswood.

The following plants, among many others, were seen: Wood Horse-tail (*Equisetum sylvaticum*), yellow Mountain Pansy (*Viola lutea*),

Common Butterwort (*Pinguicula vulgaris*), Mossy Saxifrage (*Saxifraga hypnoides*), Fairy Flax (*Linum catharticum*) and Marsh Arrowgrass (*Triglochin palustris*).

R. Begg

Outing to Belhaven Bay - 8 July 1978

The science of geology is founded upon the tenet that "The present holds the key to the past". This teaching was succinctly demonstrated at an excursion led by Dr. John Miller (Grant Institute of Geology) to Belhaven Bay, near Dunbar. This part of the coastline has many associations with early workers in Scottish Geology, especially that of Dr. James Hutton after whom the well known unconformity at Siccar Point is named. Hutton's pioneering work, 'The Theory of the Earth' published in 1795, discussed amongst other subjects, the erosion of the earth's crust by various weathering agents, the transportation of eroded material, its deposition and eventual transformation into solid rock.

The object of the excursion, explained Dr. Miller, was to examine the deposits being laid down at the mouth of the River Tyne and to demonstrate the effect upon them by the action of tide and current. The flora and fauna living between the low tide line and the sand dunes would be examined and the influence upon them by an unstable environment considered. Examples of sedimentary structures illustrating the origin of similar structures in ancient rocks would also be demonstrated. Thus the present would actually be seen as the key to the past and to some extent give some indications as to the future.

Dr. Miller then led the party across Belhaven Sands to where the River Tyne flows through the wet sand beds between the low and high tide lines. Sand deposited at the mouth of the Tyne during high tide is swept away by the outgoing tidal currents. This sweeping away of river deposited sediment is the factor which decides whether a river mouth is estuarine (no build up of sediment) or deltaic (build up of sediment).

Next we turned our attention to the sinuous route taken across the sand by the Tyne. Dr. Miller explained that if a series of aerial photographs were taken over a period they would show that the river meanders migrate sideways and forward over an area known as a meander belt. The mechanism controlling movement within a meander belt is mainly that of erosion and deposition. As the river current swings from side to side through the loops of the meander, concave banks (cut edges) are being continually eroded while on the opposite side the convex banks (point bars) are steadily built up by deposition of eroded material from upstream. The concave bank is always steeper while the convex bank has a relatively gentle slope.

Dr. Miller next cut a section through a small sand bank to reveal a series of thin alternating horizontal layers of rough and smooth sand. The rough sand had been deposited when the tide was in full flood whilst the smooth sand represented a stage when the tide was on the wane. Each pair of layers represented one tidal cycle.

The sand banks are constantly being disturbed by changes in current direction and in one section we saw where the thin sand layers in a bank had been truncated by the current. Similar structures known as current bedding can be seen in local sandstone deposits laid down many million years ago.

Next, various aspects of a wet sand environment were dealt with by Dr. Miller who went on to demonstrate two interesting properties associated with wet sand - namely thixotropacy and dilatancy. Wet sand is said to be thixotropic when as a result of agitation by, for example, burrowing, the sand shows a temporary reduction in its viscosity as each sand grain is surrounded by a film of water. Certain life forms such as the Lugworm and the Common Cockle which live in wet sand, utilise this property for easier movement through the sand. Many shore feeding birds such as the Oystercatcher and Dunlin reduce the viscosity of the sand by 'tapping' or 'patting' it with feet or beak to reach more easily the crustaceans or worms upon which they feed.

Wet sand is said to be dilatant when because of pressure, the water is driven out, resulting in the solidification of the sand mass. Burrowing animals find dilatant substrates difficult to pass through and as a result few life forms other than microscopic are found in such an environment. The main factor governing thixotropacy and dilatancy is the size of the sand or mud grain. The smaller the grain, the greater is the tendency towards thixotropacy.

Examples of patterns occurring on or below the surface of wet sand, such as ripple marks, provided an interesting study. Referred to as trace fossils, similar markings can be seen in ancient sandstones. Perhaps the most familiar trace markings are the ripple marks exposed by the retreating tide. They are produced by the oscillation of the water driven into movement by wind playing over its surface. Ripple marks are a feature of shallow water. Thus ripple marks revealed in ancient rocks point towards their formation in some ancient shallow sea. Other trace markings observed included mollusc trails, burrows and casts of the lugworm and foot prints of sea birds. Dr. Miller demonstrated how the rib pattern on the shell of the cockle assisted the creature in burying itself. Most bivalves align themselves in relation to prevailing tidal currents to facilitate their feeding. Similar life forms now fossilised are found *in situ* in ancient rocks and as a result it is often possible to deduce from their alignment the tidal currents prevailing when the rocks were deposited.

Finally, the party visited the sand dunes which back up the wet sand area. Dr. Miller went on to describe the development of a sand dune environment. Dry sand, blown by prevailing onshore winds, is held by tussocks of vegetation or surface irregularities until the drifting sand forms a natural bulwark of small sand hills. Sand dunes are usually bound together by the roots of marram grass which is about the only plant able to live within the unconsolidated sand. As the dunes develop, a variety of plants begin to establish themselves, which in turn give shelter to a variety of small mammals, insects and birds. Severe gales may breach a mature dune by scooping out deep hollows known as 'blow outs'. If as a result the water table is reached, the hollows become marshy and are known as 'slacks'.

In proposing a vote of thanks at the conclusion of the excursion, the President referred to Dr. Miller's winter lecture 'Patterns in Nature', as a useful introduction to this excursion which was enhanced by his dual qualification as geologist and naturalist.

G. Bell

Sausages first followed by moths - 22 July 1978

On Saturday, 22 July the Society held a Barbecue on the foreshore at Seacliff Bay near North Berwick, followed by the installation of a moth trap in adjoining woodland. Our thanks are due to Mr. Dale for allowing us to visit Seacliff which is part of his private estate.

The Barbecue commenced at 20.00 hours and surprisingly, considering strong winds earlier in the day, it was good sausage sizzling weather.

An hour before midnight we extinguished the fires and retired to the nearby wood where George Evans (SWT Warden at St. Abbs) and Rennie Weatherhead had the light trap in position. It was well after midnight before we left for home well fed and considerably wiser in the ways of moths. We identified 14 species and there is no doubt that this combined event of Barbecue and moth trap was a great success.

Moths seen in the trap: Spectacle, Double Square Spot, Dark Arches, Light Emerald, Mottled Beauty, Burnished Brass, Green Carpet, Marbled Minor, Plain Golden Y, Small Fanfoot, Silver-ground Carpet, Champion, Garden Carpet, 'micro' - *Pyrausta olivalio*.

C. Pountain

Outing to Corbie Linn and Lingie Glen - 5 August 1978

As the company set off in sunshine following days of dampness, Lime trees were in full flower, perfuming the air. By the track to the Corbie Linn, Red-berried Elder (*Sambucus racemosa*) was seen in fruit, and pinkish flowers of Hedge Parsley (*Torilis japonica*) were compared with the white Umbellifer, Burnet Saxifrage (*Pimpinella saxifraga*).

On the rocks of the gorge (a similar situation to its Edinburgh site on Samson's Ribs), Sticky Catchfly (*Lychnis viscaria*) was seen in fruit, then near Philiphaugh Top Pond, Marsh or Greater Bird's-foot-trefoil (*Lotus uliginosus*) grew tall.

Hundreds of minute Toads and Frogs scuttled amongst the grass here, having just completed their metamorphosis, making it difficult to find a place to sit for lunch. Mrs. E. Smith took the opportunity to show us the damselfly, Green Lestes (*Lestes sponsa*), and the way it sat with partly opened wings, as compared with the Common Blue Damselfly (*Enallagma cyathigerum*) which closed its wings in repose.

The short climb up the heather slope produced larvae of Dark Tussock Moth (*Dasychira fascelina*) which were ichneumonated (see page 25), and a healthy Northern Eggar (*Lasiocampa callunae*), later followed by

a parasitised cocoon of the same. Triple-bar (*Anaitis plagiota*) and Antler Moths (*Cerapteryx graminii*) were captured.

Common Blue (*Polommatus icarus*), Meadow Brown (*Maniola jurtina*), and the first male Scotch Argus Butterflies (*Erebia aethiops*) of the year were examined.

A juvenile, but nearly fully grown, Curlew created interest for it allowed everyone to approach as it squatted among short heather.

Bog Asphodel (*Narthecium ossifragum*), Round-leaved or Common Sundew (*Drosera rotundifolia*) and Grass-of-Parnassus (*Parnassia palustris*) were noted in a sphagnum flush, and a few members saw Field Gentian (*Gentianella campestris*) not realising how rare it is in Selkirkshire.

Mrs. E. Farquharson collected mushrooms, puff-balls, and the beautiful Amethyst Deceiver (*Laccaria amethystea*) with other fungi.

A.J. Smith

Outing to the St. Boswells area - 12 August 1978

On a particularly wet Saturday when it rained without remission all day, 24 members spent an exceptionally interesting morning and afternoon in the St. Boswells area with Mr. John Forsyth, Outdoor Education Officer for the Borders.

It had been Mr. Forsyth's intention to take us to Bemersyde Moss in the morning and to Whitrig Bog in the afternoon, but, because of the rain, he took us on arrival to a nearby teaching centre where he gave us a resumé of the geology, natural history, and changing land and water use of these two areas.

In glacial times the basins of Bemersyde and Whitrig Lochs were made when the ground was hollowed out by moving ice, forming a glacial trough. In time, these lochs gradually became filled in by natural processes, but when Timothy Pont surveyed the area between 1583 and 1601 for his map of Mercia, the two lochs are clearly shown with Whitrig being roughly four times the size of Bemersyde. From farm and estate records it is known that Bemersyde eventually dried out sufficiently to become useful farm land from which hay was cut. At a later unknown date the outflow was partially dammed and the area is now a marsh, popular with duckshooters and supporting a huge colony of Blackheaded Gulls. The water remains shallow below which is a deep ooze. The flora tends to be limited and there are no rarities. Through the centuries the loch has been referred to as Bemersyde, Wester, or Mertoun Loch.

Whitrig Bog, also known in the past as Whiteridge or Easter Loch, is now undulating grassland with a very small loch. The area remained under water until, in the 1700's, Lord Polwarth realised its economic potential. The loch was surveyed and shown to have two bands of marl below which lay a fine grained brick clay. At the edge of the old loch the surface was coarse sand but in from the water edge peat was 3 m thick. Neither the marl nor the clay could be exploited until the

loch was drained, so at a date not yet definitely known a drainage tunnel was built passing from the loch south under Whittrighill farm towards Maidenhall. Miners probably built the tunnel as mining words are used in connection with it, the tunnel being called the 'drift' and the upshafts from the tunnel 'staples'. The tunnel is now in disrepair and the area floods readily.

Early records show that there were grinding mills dependent on the flow of water from these two lochs, while there is a document dated and signed in 1602 which refers to 'eelarks' and 'creels' - boxes for storing eels and fish - in Loch Mertoun.

Analysis of the marl which has been formed from the shells of freshwater snails and plant remains of the Stonewort (*Chava*), an alga whose surface is encrusted with carbonate of lime, has shown a 73 per cent carbonate of lime content. The marl was removed in large quantities for the improvement of the local farms, 300 cartloads to the acre having been recorded.

After drainage of Whitrig, tileworks were built where roof pantiles and drainage tiles were made. Pantiles, not normally used on Border houses, would have been exported from the district but the drainage tiles were used locally and are known to have been laid under St. Boswells Green.

The afternoon was spent at Whitrig, leaving our cars at the farm of Whittrighill. Close to the farm buildings stood one of the tunnel upshafts or staples. We next passed a collapsed tunnel entrance, again close to the farm. At a lower level there was a second tunnel entrance in good condition. Care had to be taken walking over the uneven ground as in places the surface layer had given way as a result of the old diggings leaving holes several feet deep.

Only the ruins now remain of the old tile works but sufficient is still standing to see its construction and visualise it in its heyday. Looking through the grass, bricks were found stamped 'Smeaton' and 'Whitehill' (both not far from Dalkeith); these would have been brought in for use in the building of the works. Local bricks of a warm reddish brown and finely grained with 'Whitrig' stamped on them, and drainage tiles of differing diameters were also lying in the long grass.

From the tile works we walked over to the small loch disturbing Snipe on our way. We sloshed round the loch with its two hides for duckshooters and on the sloping bank Mr. Forsyth demonstrated the sandy topsoil before going down to a lower level to dig a deep pit through successive and well differentiated layers of marl and clay. Shells and plant remains could be seen when the wet marl was broken apart in horizontal planes. Digging in the wet clay was hard work for Mr. Forsyth, but he was considerably encouraged to be speedy by the steady rain and the attention of a large herd of inquisitive cattle and a bull of doubtful temper.

Botanically, the area is not particularly rich as the fields are quite heavily grazed.

Mallard, Coot, Oystercatcher, Lapwing, Snipe, Redshank and Black-headed Gull were seen during the afternoon and a Large Yellow Underwing Moth was spotted in the grass.

There is no doubt that Mr. Forsyth's tremendous enthusiasm and ability to bring in so many topics of interest from local history, feuds of bygone days, geology, botany, ornithology, land and water use kept us hardly aware of the rain and the mud. We are most grateful to him for a wonderful demonstration of how closely woven all these topics can be and how they cannot be studied in isolation if one wishes to interpret an area of countryside fully.

E. Farquharson

Outing to Aberlady Bay - 19 August 1978

An outing to Aberlady Bay is no novelty for the ENHS - indeed, there can be few areas which appear with such unfailing regularity on our excursion programme. But such are the attractions of this Nature Reserve and the surrounding district at any time of year that repetition of basically the same route never palls.

The damage to the wooden bridge over the Peffer Burn by the flood tides early this year makes access to the reserve from the south difficult, so the assembly point for some 25 members on 19 August was the Gullane car park. The weather was warm and sunny, a very pleasant change from the unremitting rain of the previous Saturday's outing, and we strolled along the sea edge identifying individual specimens of waders such as Oystercatcher, Turnstone, Redshank, and Bar-tailed Godwit which we were later to see in flocks. Offshore were rafts of Eider, the drakes in very varied eclipse and immature plumage, and we picked out among them eight Great Crested Grebe. Off the Hummel Rocks was a tight raft of some 25 to 30 Mergansers.

We lunched at Gullane Point, and, reaching Aberlady Bay too early for the incoming tide to have brought the wader flocks within viewing distance, we turned to botany on the marshes. Seablite, Sea Aster, Sea Rocket, Eyebright, Common Scurvy-grass, Prickly Saltwort, Frosted and Spear-leaved Orache, Sea-Spurrey, Sea-milkwort and Procumbent Pearlwort were among flowers seen. Meanwhile, a fast-flowing tide had brought closer good parties of Bar-tailed Godwit, Knot, Grey Plover, Curlew, Dunlin and Redshank, and we watched for some time in the vicinity of the Little Tern nesting ground. The Little Tern themselves, following the disastrous flooding of their colony in July, had left the area, but some of our party saw an Arctic Skua harrying the Sandwich Terns which were still quite numerous and still carrying fish to their young. Three Ruffs were present (one apparently with an injured leg), a single Curlew Sandpiper, a Greenshank, and, flying over and calling as we left the beach, three Whimbrel.

The return journey was taken through the sand dunes and by the ponds, where we found several newt families under pieces of driftwood. Among the plants in these areas were Lesser Spearwort, Amphibious Bistort, Marsh Willowherb, Marsh Pennywort, and striking drifts of Grass-of-Parnassus in full flower. An unexpected find beside a path through the dunes was a single clump of Wild Basil.

As we reached the top of the Links and looked down again on the rafts of Eider, we picked out a group of Scoter, and again heard the call of the Whimbrel as three birds made their way to the Bay. Closer at hand we watched Goldfinches on the thistles, and Linnets, Meadow Pipits, Larks and a Kestrel over the grassland.

Our final botanical foray was around the old rubbish tip. Here Hemlock is abundant, also Weld, Greater Burdock, Yarrow, and some fine spikes of Mullein. More Goldfinches were seen, and Bullfinch and Reed Bunting. Then back to the cars at the end of a very enjoyable outing.

M. Watson

Northumberland weekend -

Friday evening, 15 September to Monday, 18 September 1978

Saturday: A visit was made to Holy Island. The following birds were seen (*by E. Hamilton*):

At field ponds near the harbour

Curlew Sandpiper (20), Little Stint (12), Sparrowhawk (1), Kestrel (1), Ringed Plover (50), Mallard (14), Shelduck (1), Starling (numerous), Redshank (20+), Peewit (6+), Dunlin (6+), Great Black-backed Gull (about 12), Herring Gull (about 30), Black-headed Gull (about 30), Snipe (2).

On the walk from the village to the sandy bay - north end of island

Wheatears - juvenile or female (6-8), Bar-tailed Godwit (15), Sanderling (4), Eider Duck (300-500).

Many Swallows and House Martins were flying over fields all afternoon.

Sunday: Members were met at Low Newton-by-the-Sea by Mr. D. Hinshelwood who led us in the morning. The party went over the fields to a bay called Football Hole, then round Newton Point to Newton Bay and Newton Pond. We were told that Newton Pond was being improved by the Naturalist Trust to attract wildfowl. It was being dredged and cleared of Bottle Sedge and other plants. Islands were being created, some covered in Mare's-tail, for ground cover.

The pond was well-populated in spring by a large colony of Black-backed Gulls (about 600 pairs), some Mallard and a few pairs of Tufted Duck, all nesting this year.

There is a very good hide which affords an excellent view of the entire pond. It is available for use at all times.

Monday: In the morning the party visited Glanton World Bird Research Station. There we saw, not only various injured or convalescing wild birds, but also many domesticated species including Muscovy, Jungle Fowl and Wild Turkey which have been bred by Man since pre-history.

Then followed a visit to Chillingham Estate in the afternoon to see the Chillingham Wild Cattle (53 in herd). We were fortunate enough to have an unusually close view of them and in having an interesting talk by the keeper. He explained how the cattle had been

completely untouched by Man for several centuries, and their territory also left entirely untouched, the only assistance to their survival being some hay in very hard weather (they would not touch cattle cake or artificial food). The number fluctuated over the years, at present the herd is at a very high level of 53 animals, of which about 30 are adult bulls. There is one 'king' bull, the only one permitted to breed as it chases off all the weaker bulls, thus ensuring a really strong strain of cattle. The cows only have three calves each, never twins, and do not start breeding until they are at least four years old. There are usually a few solitary bulls 'sulking' in the distance as they have been deposed from the herd. One interesting animal was a two-year old heifer which had been abandoned as a very young calf but had managed to survive on her own in spite of becoming blind in one eye and being much smaller than normal. She always kept apart from the main herd although they now tolerate her presence.

One interesting factor was the completely undisturbed wildlife, including Fallow Deer, as the very fierce cattle acted as 'keepers', attacking any man who entered their territory. They would sometimes attack the tractor if it became necessary to enter their enclosure to remove a dead animal (future corpses are 'booked up' by research establishments for years to come).

S. Gray

Fungus foray with the Botanical Society of Edinburgh - 23 September 1978

The autumn fungus foray held jointly with the Botanical Society of Edinburgh and led by Dr. Philip Mason was a most stimulating meeting.

The afternoon was spent on the Bush Estate. First we walked across the lawns which were colourful with *Hygrophorus* and *Russula* species. Individual trees growing on the lawns produced *Boletus edulis* under Beech, *Lactarius rufus* under a young conifer and *Suillus luteus* under a Lodgepole Pine. From the lawns we walked into the more wooded parts of the estate. Many species were seen but *Laccaria amethystea* was very much in evidence though dried out in the recent high winds. On two of the tall well grown beech trees *Oudemansiella mucida* was seen.

By the end of the afternoon many specimens had been collected. These were taken back to one of the buildings and laid out in groups giving us the chance to benefit from other people's finds.

It is hoped that a fungus foray with the BSE will continue to be held each year.

E. Farquharson

Outing to Musselburgh lagoons and Kilspindie - 25 November 1978

Members of the Society met at 11 am at Goose Green, Musselburgh. The morning was fine and frosty and although bitterly cold the light was ideal for bird watching.

The purpose of the outing was to look at wildfowl and waders not just at Musselburgh but also at Kilspindie. It was agreed therefore that we should spend the morning at the lagoons and then after lunch drive to Aberlady and walk along the west side of the Bay by the Kilspindie golf course.

The tide was high when we arrived at the lagoons and we had excellent views of sea duck. We observed the usual concentration of Goldeneye near the mouth of the Esk and as we walked eastwards by the sea wall towards Cockenzie we had exceptionally good views of Long-tailed Duck diving within a few feet of the sea wall.

One of our members had mentioned that on the previous Monday he had counted five Short-eared Owls on the grassed area that was formerly one of the lagoons. He also mentioned that Snow Buntings were seen in the same area as the Owls. Thus, with our curiosity fully aroused we looked especially at this grassed area and were rewarded with excellent views of the Short-eared Owls (still five in number) and as we watched them four Snow Buntings flew past. Good birdwatching this! Presumably the grass was now sufficiently long to attract small mammals thus providing prey for the owls. The birds had certainly been in this confined area for almost a week and maybe will remain for some time. This is interesting when one considers that this is a built-up area with a fair amount of disturbance especially from the local dog population.

In the afternoon our walk from Aberlady along the road leading to Kilspindie Golf Club House and beyond yielded some excellent views of Wigeon and Shelduck. We also saw Red-breasted Mergansers. The common waders were in evidence and in particular we had good sightings of Golden and Grey Plover together showing their contrasting plumages.

As we walked back to Aberlady we counted the Pink-feet flying into the Bay to roost. This particular evening they came in mainly small parties and we counted a total of approximately 2000. A comparatively small number by Aberlady standards and no doubt we missed the larger skeins coming in.

Nevertheless, the flighting in of the geese provided a fitting end to a good day in which we looked at two different localities.

C. Pountain

BOOK REVIEW

"Biological Management and Conservation"

M.B. Usher

Science Paperbacks

Dr. Michael Usher, now lecturing in the Biology Department of York University, was progenitor and first editor of our Journal or Newsletter as it was then known. It therefore gives one great pleasure to acknowledge the gift from the author of a copy of this book, first published in 1973 and considered important enough to be issued this year, 1978, as a Science Paperback.

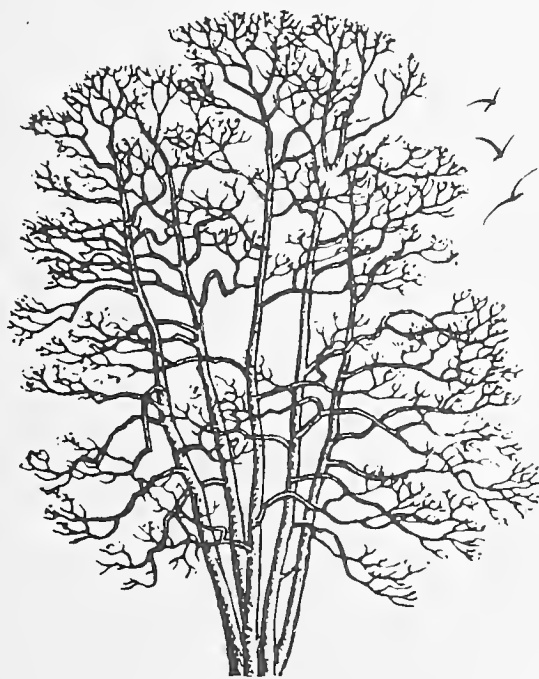
Because of the width of the subject, the author has concentrated on wild-life and conservation in relation to nature reserves. In his introduction he outlines the processes of change affecting the environment and the action necessary to preserve the balance between man and the biosphere. First there must be investigation, then formulation of a plan of management and, lastly, implementation of that plan. These three considerations form the pattern of his book.

It is essentially a text-book for the serious student but, leaving aside the mathematical techniques used in analysis of data, there is much to interest and inform the concerned naturalist - accounts of the spread of alien species such as the grey squirrel, the succession of stages in the building up of a habitat, the effects of over- and under-exploitation, amateur successes in the field of conservation, eg the monkey orchid in England and the osprey in Scotland, conservation and education, conservation and recreation, and, finally, a very interesting account of the Aberlady Bay Local Nature Reserve and its management plan.

KPW

61a.

THE
EDINBURGH
NATURAL HISTORY SOCIETY



JOURNAL
1979

EDINBURGH NATURAL HISTORY SOCIETY

1979

PRESIDENT	Miss J. Raeburn	
VICE-PRESIDENTS	Miss M. Mowat Mr. G. Bell	
HONORARY SECRETARY	Mrs. C. Stewart 41 Craigleith Hill Avenue, Edinburgh EH4 2JL Tel: 031-332 7524	
HONORARY TREASURER	Mr. A. Dickson 31 Alva Place, Edinburgh EH7 5AY Tel: 031-661-1216	
MINUTES SECRETARY	Miss K.P. Wilson	
COUNCIL MEMBERS	Mr. R. Frame Mr. H.G. Ford Miss B. Gordon (Mrs. N. Fisher replaces Mr. G. Bell as a Council Member until 1981) Mr. M. Robinson Mr. K.W. Sanderson Mrs. E. Farquharson Mr. W.D. Gill Mr. G. Reynolds	appointed 1977 1977 1977 1978 1978 1979 1979 1979
JOURNAL COMMITTEE	Mrs. E. Farquharson Miss N.F. Henderson Miss H. Jackson Miss J. Raeburn - Convener Mr. C.P. Rawcliffe Mrs. C. Stewart	
EXCURSION COMMITTEE	Mrs. E. Farquharson 6 Chamberlain Road, Edinburgh EH10 4DN Mrs. S.G. Gray 40 Oxbgangs Road, Edinburgh EH10 7AX Mrs. H.M. Miller 72 St Albans Road, Edinburgh EH9 2PG Mr. C. Pountain - Convener 33 Baberton Mains Crescent, Edinburgh EH14 3DY	
RECORDS SECRETARY	Miss M. Mowat 45 Merchiston Crescent, Edinburgh EH10 5AH	
EXCURSION REPRESENTATIVE on the COUNCIL	Mrs S.G. Gray	
LIBRARIAN	Miss F. Howie 3 Wellington Street, Edinburgh EH7 5EE Tel: 031-556-6471	

CONTENTS

	<u>Page</u>
EDITORIAL	2
TREE PLANTING 1979	3
WINTER INDOOR MEETINGS	4
THE REVEALING LENS	6
ARABLE CROPS IN SOUTH-EAST SCOTLAND	8
BIOLOGICAL MONITORING OF RIVERS	11
WHAT DOES THE FUTURE HOLD FOR THE UNION CANAL?	15
YOC/ENHS WATER OF LEITH SURVEY 1978	18
FORTH ISLAND BIRD COUNT 1979	22
'GOOD YEAR' FOR TERNS	24
BIRD WATCHING HIGHLIGHTS IN SCOTLAND 1978/79	25
DUTCH ELM DISEASE IN THE LOTHIAN 1979	26
THE HOPETOUN HOUSE NATURE TRAIL	27
WITHIN THE GROUNDS OF THE CITY HOSPITAL	29
HEDGEHOGS	30
AN INTRODUCTION TO SAWFLIES	31
SOME NOTES ON NATURAL HISTORY	34
OBSERVATIONS MADE BY MEMBERS DURING 1979	37
EXCURSIONS 1979	39
REPORTS AND EXTRACTS FROM REPORTS	40
FROM THE LIBRARIAN	

EDITORIAL

In spite of rather inclement weather many members and friends were able to enjoy the wide range of spring and summer excursions listed in this Journal on page 39. We give our thanks and pay tribute to our very active Excursion Committee who plan and organise such an interesting programme with care, thought and imagination. We also thank the Naturalists who meet us at our destination and during the day share their knowledge and enthusiasm. The two weekends, in the spring in the limestone area of Westmorland, and in the autumn on Deeside, are particularly memorable.

Through the kindness and help of Professor L.G. Whitby, the Society has been able to purchase three microscopes for the use of members. Little time elapsed before all three were out on loan. Mrs. Ena Gillespie in the first article 'The Revealing Lens', has introduced members to the excitement and thrill she has experienced during her investigations and Miss Heather McHaffie has illustrated this article with drawings of specimens as she has seen them through one of the borrowed instruments. It is hoped that members who have never used a microscope will feel free to apply for one. Help and instructions will always be given on its use.

Watery habitats have been rapidly disappearing in Britain through drainage or as a result of pollution. But in Edinburgh we are fortunate in having two healthy waterways passing through the City, one the Canal, man-made but adopted by nature, the other the Water of Leith. Dr. John Sheldon has given us an insight into the future development of the canal and we hope that with careful management a happy compromise between the claims of recreation and conservation of wildlife may be reached. Mrs. E.S. da Prato has described the monitoring of the Water of Leith and how the purity of water may be assessed by recording the different water invertebrates, while the survey carried out by the YOC and ENHS shows that the river continues to provide a habitat for birds.

Mrs Margaret Watson our retiring President, left Scotland before the AGM for a year or more in the Far East, where her husband has an assignment. Thanks were sent to her by letter for her work for the Society at meetings and behind the scenes.

At the AGM in October, Mr. Charles Rawcliffe resigned as Treasurer, a post which he had held since October 1970. Throughout the nine years he has nurtured our finances with skill and thought and given advice to the Council. We now have a healthy balance, so necessary for a stable Society. At the December meeting members thanked him in a tangible way. We welcome our new Treasurer, Mr. A. Dickson, and hope that he will not find the work too arduous.

Mrs. Elspeth Hamilton has now relinquished her post as Records Secretary. We thank her for all the care and hours of her time given to this work which Miss M. Mowat has very kindly agreed to continue.

The Journal gives a pleasant opportunity of thanking the Secretary and Minutes Secretary for all their work seen and unseen. Once again our thanks go to the many members who support the Society in all kinds of ways, especially the Projectionist, Librarian - there is a note from the Librarian on the last page - and the coffee makers. Also, we are glad that Mr. Gordon Finnie and his associates and Mrs. F.J. Anderson are continuing to help us with the production of the Journal.

During the year resignations have been received from Mr. and Mrs. Grey, Mrs. B. James, Dr. and Mrs. Montgomerie and Miss M.J. Shand.

We record with sorrow the death of Mr. D.R.B. Stewart.

TREE PLANTING 1979

Members may recall 1973 as being the year when we were asked to 'Plant a Tree for 73'. The Society collected a sum of money and a group of mixed trees were planted at the crag slope of Wester Craiglockhart Hill early in 1974. At that time all the money collected was not required, so this year we decided to approach Mr. George Walker, District Ecologist, regarding a second amenity tree planting. A suitable date and place for this between the mouth of the Almond and Cramond Brig, along the stretch of embankment, were finally arranged.

On 17 November, during National Tree Week, a large group of interested people gathered just beyond the lower car park at Cramond, to take part in the ceremony. There were members of VERC (Volunteers Environmental Resources Centre), a good turn out of children with parents from Cramond Primary School, older children from the Conservation Clubs of Ainslie Park and Craigmount Schools and members of the Edinburgh Natural History Society. Everyone, young and old, dug suitable holes for the trees and planted with enthusiasm.

After lunch the members of the Natural History Society present took a few young trees (oaks, beeches and maples) up to the Craiglockhart Hill site to replace some of the trees which had been damaged since the planting in 1974.

B. Gordon

AND TREES LONG AGO

Members may not know that the fossilised tree trunk standing in the grounds of the British Museum (Natural History), South Kensington, came from Craighleith Quarry, Edinburgh. It is about 300 million years old and was excavated from rocks of Lower Carboniferous age.

WINTER INDOOR MEETINGS 1979

One of the notable features of 1979 was its weather. For the first time in the writer's experience a Society indoor meeting had to be cancelled. In January, the trusted speaker, Cdr. Spragge, was snow-bound at Ceres, as indeed was most of his putative audience in Edinburgh. Hopefully, Cdr. Spragge will continue the story of his South American adventures during the current season's programme.

In February, Dr. Argent of the Royal Botanic Garden took us far from the frozen Edinburgh scene to the Mulu National Park in Borneo where, as part of a Royal Geographical expedition, he had been plant-collecting in 1977-78. The expedition had been flown into Brunei by the RAF and, thereafter, travel in the difficult interior was by boat and on foot. The Park itself was mostly shale and limestone country, rising in parts to about 7000 ft and with areas of peat swamp. For the most part it was covered with a very rich tropical rain-forest and was relatively undisturbed by humans. The few natives in the area were nomadic hunters, were friendly to the expedition and acted as guides on long excursions.

One could start collecting on the doorstep of the base camp; interesting plants found in the vicinity included wild Bananas, Orchids, Waterlilies, African Violets. The three botanists from Edinburgh were particularly interested in the Ericaceae (specifically the Rhododendrons) which grew abundantly in the woody litter on top of the limestone. One expedition undertaken in the course of the year was to a 6000 ft peak. Very difficult terrain, consisting of limestone pinnacles 100 ft high, was encountered above 4000 ft and unstable limestone boulders were further hazards of the way. Many exciting and undescribed species of plant were found en route, including different species of Nepenthes, their only source of water, much Pandanus and then low vegetation with Orchids and Rhododendrons on the peat accumulation. Another expedition was to a valley cleft, formed by a collapsed cave system. Here, camping on a very wet, sunless area below towering cliffs, they found parasitic plants, fist-size, on the trees, and a cliff-face covered with an exciting Slipper Orchid with 3 ft long tassels (this plant now established in the Edinburgh Botanic Garden). On a non-limestone massif, new white Rhododendrons were found, white-flowered Bilberry, small Nepenthes and, on the sandy shales at the peak, many interesting lichens and mushrooms.

In rounding off his most fascinating lecture, Dr. Argent stressed how important was the Park in protecting some portion of the tropical rain-forest from exploitation.

The March address was set much nearer home. Dr. Mary Noble, an authority on potato diseases, talked about 'Scottish Mycology and Beatrix Potter'.

The British Mycological Society had met in Scotland in 1946, and in 1975 the Scottish Cryptogamic Society had celebrated its centenary. Through these two events the speaker had come to know of the work of the Perthshire amateur botanist, Charles McIntosh, whom Beatrix Potter, already interested in ferns and mosses, had met on youthful holidays at Dalguise. Miss Potter had come back to Mycology at the end of her

life and produced a collection of 250 paintings of fungi, a work which was still being used to illustrate books on the subject. Dr. Noble told many humorous anecdotes of the characters involved in her story and illustrated it with some historic slides.

In April came Members' Night. The chance to see the film, sponsored by the Bank of Scotland, on the history of the Edinburgh Botanic Garden was too good to be missed and its showing filled the first half of the programme. It was an excellent film. The Bank also supplied the projector and the projectionist and earned the Society's gratitude for the provision of a most enjoyable event.

After coffee, Mr. John Winham presented a series of excellent flower slides, taken in the vicinity of Glenshee while on a course at Kindrogan. Mr. Geoffrey Reynolds showed us some of the exotic flora and fauna and historical landmarks of Tunisia, and Mr. Arthur Smith reminded us of a pleasant summer day, spent by the Society in an old railway cutting south of Hawick, and some of the interesting specimens found there.

The business of the AGM in October was followed, as is the custom, by an address from a member - this year Mr. G. Walker, Edinburgh District Ecologist. His subject was 'Landscape Conservation in Edinburgh'.

In his talk he dealt with:

1. the statutory responsibility of the local authority,
2. the work done or contemplated on 'walk-ways',
3. the problems of Dutch Elm disease, and
4. the future landscape of the city

Mr. Walker illustrated his points with excellent slides showing various protected areas, how recreational needs were being catered for by the provision of better footpaths, safer footbridges, children's playgrounds on derelict land. He acknowledged the help of the voluntary societies and the contribution to amenity of well-planted private land. In this latter connection, his department could be approached for advice on tree-pruning or on complaints about exclusion of light. Refuse dumping was being given much thought, and old cemeteries, such as Warriston and Newington, which gave useful refuges for wild-life in the city, should be rescued from total neglect. Cammo estate would probably be turned into a country park and replanting was being done wherever the ravages of Dutch Elm disease had been felt. A positive attitude had been adopted to this threat and possibly a better tree mix would result.

November brought Mrs. J. Horobin from St. Andrews to talk about 'Tentsmuir National Nature Reservoir'. This was a follow-up on a Society outing there in May, under her leadership. As this outing is fully described elsewhere in the Journal, the reader is referred to that article for the substance of Mrs. Horobin's address.

The speaker at the last meeting of the year was Mr. John Forsyth, Outdoor Education Adviser for the Border Region; his subject 'The Borders from the Air'.

Mr. Forsyth took us by means of slides made on several different occasions on a delightful aerial trip round the Borders - from Melrose, over the Eildons, to Bowden, Selkirk, Hawick, the Cheviots, Kelso, Coldstream and Cornhill, Norham, the Berwickshire coast, the Lammermuirs and back to St. Boswell's, Tweedbank and Galashiels.

He said there was no special mystique about aerial photography - all one needed was the money to pay for the hire of an aircraft (preferably an old Cessna with raised wings), a screw-driver to open a window (with the pilot's permission) and a camera with 'through the lens metering' and a reasonably fast film - also clear atmospheric conditions (April or September best).

Amongst the archaeological and geological features that showed up clearly on the slides were the numerous Iron Age hill forts, the sites of Roman camps and training grounds, old cultivation terraces, rock ridges formed by the movement of the ice, the lines of old lava flows and new forestry roads. On the bare flat top of Muckle Cheviot and the lonely valleys, the wild Berwickshire coast at St. Abb's Head and Fast Castle and the rich farmlands of the Merse, the ice-deposited hummocks near Coldstream, the Edenshall broch and the Border mansion-house, the strip heather-burning on the Lammermuirs and the pond and marsh nature reserves, the camera turned its revealing eye, and, even as he looked again at his slides, Mr. Forsyth kept making further discoveries. It was a fascinating demonstration of the value of aerial photography as an archaeological and land survey tool.

K.P. Wilson

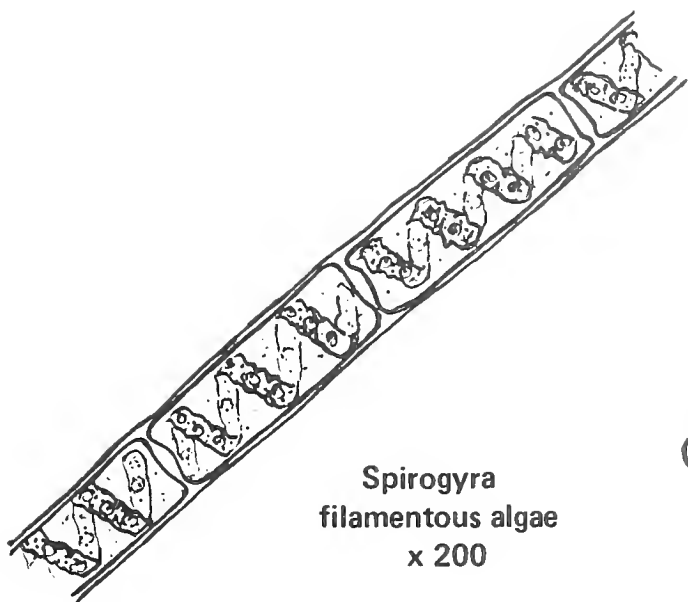
THE REVEALING LENS

Many fascinating sights can be seen with the aid of a microscope. Now that the Society has three microscopes which can be borrowed by members, there is no end to the interesting viewing that can be experienced and to the investigations which can be carried out.

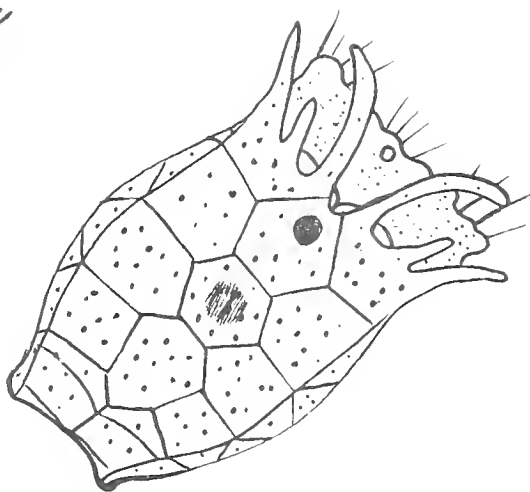
Moss identification becomes much easier and the beauty of the delicate cell structure can be appreciated. The protonema, the first stage of the moss cycle, can be studied. This stage is overlooked by most people. Likewise, the prothallus of the fern can be studied and the young fern growing from the prothallus be observed. With a microscope and Hubbard's book, grass identification becomes a real possibility.

If one looks at insects and other invertebrates, a whole new field of interest opens up. Magnified insects reveal their beauty and magnificence. Many groups of insects can be identified without too much difficulty.

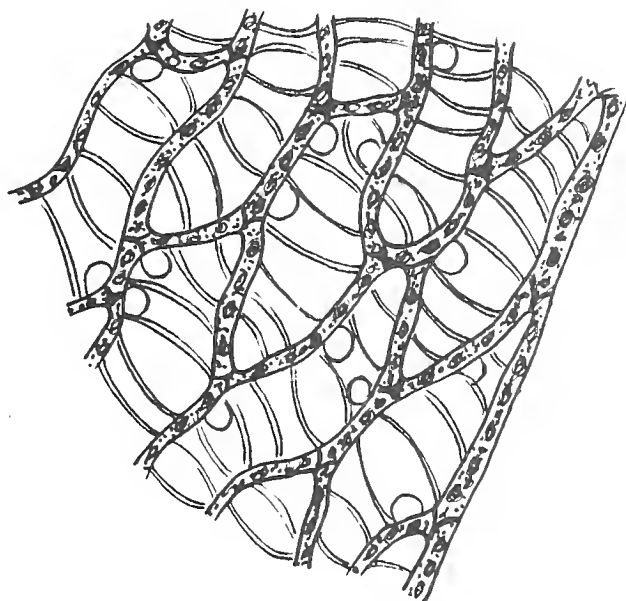
Pond water can hold a great number of microscopic organisms. To watch a number of boat-shaped diatoms gliding over the slide in all directions, with the grandeur of ocean liners, is positively fascinating, especially as they have no visible means of locomotion. Observing the many and varied protozoa and rotifers feeding and moving amongst the detritus etc on the slide, can occupy many pleasurable hours.



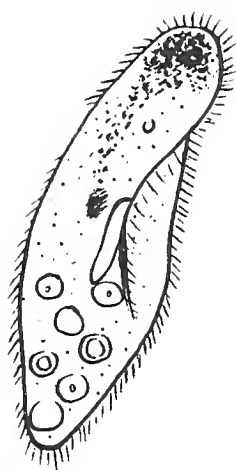
Spirogyra
filamentous algae
x 200



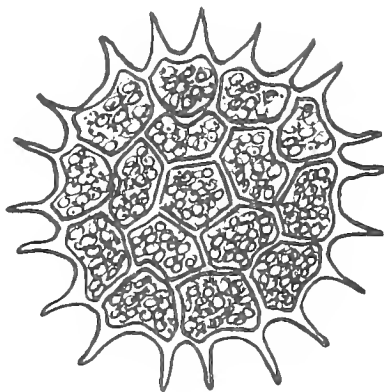
Keratella
Rotifer x 375



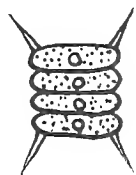
Sphagnum cells
x 250



Paramecium
Protozoan
x 450



Pediatrum
colonial algae
x 450



Scenedesmus
colonial algae
x 800

H.M.

The filamentous algae which often look like slime, are, when magnified, pictures of delicate green strands. By observing the shape of the green chloroplast within a cell, a filamentous alga can be identified to genus level quite easily. Many single celled and colonial algae can also be identified to genus.

Amongst the larger aquatic organisms, for which a microscope is needed for examining their distinguishing features, there are about 100 species of Cladocera, of which Daphnia is best known. Eighteen species can be found around Edinburgh. Of the 32 species of Lesser Boatman, 18 species can be found locally. Keys for these and other aquatic organisms are readily available and an excellent book on this subject is obtainable from the Central Public Library - 'Freshwater Microscopy' by W. J. Garnett.

It can only be hoped that many members will take the opportunity to glimpse at this marvellous micro-world.

E. Gillespie

References

Garnett, W. J. Freshwater Microscopy
Hubbard, C. J. Grasses

MICROSCOPE BOOKING

*Any member interested in borrowing a microscope should apply to:
Miss J. K. Raeburn, 37 Dreghorn Loan, Edinburgh EH13 0DF.*

ARABLE CROPS IN SOUTH-EAST SCOTLAND

Over the past 12 months I have joined a number of the Society's Saturday forays into our countryside. A good proportion of these outings have visited areas with which I was previously familiar and it has become apparent that there are in fact two countrysides.

Excursions have been along river banks, sea shores, railway tracks and woodland paths from which we look over the fence at the various field crops. On my previous visits the position was reversed as I have been in the fields, and surrounding areas of uncultivated land tend to be regarded merely as potential harbourers of crop pests and weeds.

The flora of arable fields is obviously far removed from that of the natural countryside. Any plant which is not of the species and even of the variety being grown that year, is regarded as a weed. On the other hand, the fauna moves around and finds in arable crops both food source and shelter.

Cereals form the bulk of our arable crops, with barley now predominating. The popularity of barley has increased over the past 20 years, the Scottish acreage rising from 0.25 million acres in 1960 to over one million at present. In contrast, oats have fallen steadily from 680,000 acres in 1960 to only 100,000 today, whilst wheat has remained fairly steady in the 60-90,000 acre range. Barley is the bristly-looking cereal having awns which project beyond the ear and most varieties grown locally have long narrow ears bearing grain in two rows. Wheats are now practically devoid of awns and the ears

carry grain grouped in inward-facing spikelets up each side of the ear. The crop is usually erect and upright.

Oats are the ones with large open feathery panicles, instead of ears. Corn is a term sometimes used to cover all grain crops but is better restricted to maize, the source of corn on the cob and of corn-flakes. Maize is occasionally grown in south-east Scotland as a forage crop, the whole plant being cut in late autumn for stock feed. For the past few years a field of maize has been grown near the Sighthill-Mid Calder road.

Up until now, practically all our barley and oats have been sown in the spring - March and April - and all our wheat in the autumn - October and November. This was because winter wheat can survive our winters and then produce considerably higher yields of grain than spring sown wheats. Oats and barley, on the other hand, are less winter hardy and spring crops have proved to be more reliable. It is also desirable that some crops should be sown in autumn and some in spring so as to spread the work load over both periods. Thus any field carrying a cereal crop through the winter months has been almost sure to be wheat, and crops emerging in April or May have been barley - usually a paler green colour - or oats - a darker colour with narrower leaf blades. This position has changed slightly over the past two years with an increasing interest being shown in growing winter barley. Continental varieties have been introduced which have survived the winter successfully and growers are hoping that higher yields will be their reward. Gales associated with the autumn equinox are a feature of our area and they occur frequently in early September. Many of our spring barley crops are still not ripe at this time and heavy losses of grain are experienced with either complete heads or else individual grains being blown onto the ground in quantity. This offers another attraction for winter barley as it should ripen and be safely in the barn before these gales arrive.

Barley growers in Scotland are fortunate in having a market on their doorstep for the brewing and distilling trades. Almost a third of our barley ends up in this way. A spring barley called Golden Promise has currently established itself as the most popular variety. It is distinctive in having an erect growth habit with heads and awns remaining in the upright position almost until harvest. Most barleys have a lax disposition with the necks curving round to allow the heads to point downwards as they approach maturity. Although not the highest yielding variety available, it is popular with the grower in that it does not lose heads and with the buyer because it malts quickly and readily. Plant breeders are constantly presenting new varieties and each year many are screened for their suitability for Scottish conditions in an attempt to find one better than Golden Promise.

The use of chemical sprays in agriculture worries many people. Since the early 1950s herbicides have been developed to cope with almost any weed problem in cereals, and their widespread use has led to cereals becoming the cleanest crop grown. Wild oats present a particularly pernicious problem, seeds ripening and falling to the ground before the cereal harvest. Suitable herbicides are available but expense restricts their use and hand pulling is still widely adopted as a means of keeping fields clean of this weed.

Insecticides are seldom required by our cereal crops but the last six years has seen a rapid increase in the use of fungicides to

protect crops from fungal disease. As these have frequently to be applied later in the year than in the case of herbicides, some growers now include 'tramlines' or 'wheelways' in their crops so that spraying implements can pass through the standing crops with a minimum of damage. Another new group of chemical sprays consists of growth regulators. So far these are used to reduce the height of crops and to make the straw more stiff with the object of avoiding the laid and tangled crops which can make harvest so difficult.

All agricultural chemicals have to undergo screening tests before their use in farm crops is allowed and there are especially rigid rules as to which may be applied from the air.

The potato crop is familiar to everyone. New varieties, such as Pentland Crown from the Scottish Plant Breeding Station, and Maris Piper from Cambridge coupled with improved plant protection products and the use of irrigation has seen the average yield almost doubled since the 1950s. As the demand for potatoes for human consumption is if anything declining, this has meant that fewer fields of potatoes are now required. Scotland has a geographical advantage of being able to produce seed potatoes. These are not true seeds but merely small tubers taken from disease-free plants. Our climate is too cool and windy for the aphids (*Myzus persicae*) which transmit potato virus disease. Hence with careful crop inspection and the physical removal of diseased plants, healthy seed stocks are traditionally produced for sale to ware potato growers in England.

Swedes are another arable crop widely grown in south-east Scotland and usually associated with mixed and stock rearing farms. Some are harvested for feeding indoors to cattle whilst other crops are grazed *in situ* by sheep. A familiar winter scene is to see the white rows of half-eaten swedes with the sheep walking in between. Turnips are less widely grown. Similar in appearance to swedes, they differ in having no neck so that the leaves grow from the crown of the bulb. Turnips are softer and contain more water and so are consumed before the onset of frosty weather.

Amongst the minor arable crops, the last few years has seen an increased acreage of vegetables such as peas, beans, carrots, calabrese and other *brassicae*. It is considered sound husbandry to alternate such crops with cereals and these vegetables have become a welcome alternative to sugar beet which following the closure of the Cupar processing factory is no longer a viable crop in the area.

Two other minor crops attract attention. Anyone travelling south of the Border in early summer must notice the number of yellow fields, comprising masses of *brassicae* flowers. This is oil seed rape which when mature is combine harvested and dried. Oil extracted from the seed is used in the production of margarine and the residue for animal feed. The crop is not yet widely grown in Scotland but yellow fields can be found, particularly in the Kelso and Bridge of Earn areas. The other crop worthy of mention is field beans and one of the most attractive of country aromas is that emanating from a field of beans in flower. The Carse of Gowrie or the Dunbar area can reward a searching nose.

Thus the range of arable crops being grown in south-east Scotland is quite limited and some occupy only small acreages. The farm labour force has contracted steadily for many years now and the industry is

becoming highly mechanised. Barley is the dominant crop and at least for the immediate future, there are no signs that this picture will change.

W.D. Gill

BIOLOGICAL MONITORING OF RIVERS

Water is of fundamental importance in our lives. Our bodies cannot function without it and a whole range of industrial and recreational activities also depend on supplies of clean water. Fortunately, water is recycled naturally, there is no overall shortage, and the problems associated with finite resources such as fossil fuels do not affect water. The problems of water are largely problems of uneven distribution and supply combined with human misuse and short-sightedness.

To understand these problems one must consider the water cycle and some of water's fundamental properties. Most of the world's water is salt but many plants and animals can only utilise fresh water. Since the majority of industrial processes and effluent discharges also use fresh water, densely populated and industrialised parts of the world quickly reach a point where their demands on the relatively small volume of water in their rivers outstrip the capacity of the natural processes within the river to cope.

Seas tend to be more resilient due to their much larger volume but some estuaries are now badly polluted and certain toxic substances can affect even the huge volumes of water in the oceans. Some chemical effluents are toxic and kill aquatic life directly. However, the main source of pollution is still oxygen depletion caused by high concentrations of sewage and other organic wastes (eg breweries, farm wastes). The effect of such wastes can vary according to the type of receiving water but generally causes de-oxygenation which is usually caused by bacterial breakdown of organic matter.

In Britain there now exists a network of public bodies whose job it is to ensure an adequate supply of clean water to the public and industry and to monitor the condition of rivers and other water courses. The actual organisation of these bodies is not uniform throughout the United Kingdom. In Scotland, water supply is a function of the Regional Councils whereas the Scottish River Purification Boards are independent, statutory bodies whose sole responsibility is to monitor the rivers and maintain and improve their quality, if necessary by the prosecution of offenders. South of the Border the system is different with multi-purpose Water Authorities which control all aspects of water usage: pollution control, sewage works and domestic water supply etc.

The main purpose of a River Board is to prevent pollution of rivers and coastal waters. In order to control pollution, a number of scientists are required including biologists, chemists and hydrologists. The Forth River Purification Board area includes the whole of the Forth catchment as well as the rivers draining to the Firth of Forth, the main ones being the Leven, Devon, Allan, Teith, Forth, Carron, Avon, Almond, Water of Leith, Esk and Tyne, an area of 4655 sq km, with an additional 1311 sq km of tidal waters in the Firth of Forth. Because the area is so large, we divide it into two halves with

biologists based in Stirling covering the Rivers Leven to Carron and staff in Edinburgh covering the remaining rivers from the Avon in the west to the Tyne in the east.

The main work carried out by the Biology Section is the routine monitoring of the benthic (ie. bottom) fauna of rivers and to some extent the monitoring of river pollution by the examination of fish populations. The benthic fauna is sampled at 423 stations throughout the Board's area but this article is limited to biological work on the river that flows through Edinburgh - the Water of Leith.

Rivers are of great interest to the naturalist, both for the aquatic organisms they contain and as they provide a habitat for a much greater variety of creatures which live on their banks or use the river for only part of their lives. There is an understandable tendency for the larger and more colourful animals and plants to attract attention. However, for the freshwater biologist assessing

The Trent Biotic Index

Key groups	Abundance	Total number of groups present				
		0-1	2-5	6-10	11-15	16+
Plecoptera nymphs present (excluding Amphinemura)	More than one species		7	8	9	10
	One species only		6	7	8	9
Ephemeroptera nymphs present (excluding Baetis) and Amphinemura	More than one species including Amphinemura		6	7	8	9
	One species only including Amphinemura		5	6	7	8
Trichoptera larvae present and Baetis	More than one species including Baetis		5	6	7	8
	One species only including Baetis	4	4	5	6	7
Gammarus present	All above species absent	3	4	5	6	7
Snails and Asellus present	All above species absent	2	3	4	5	6
Tubificid Worms and/or Red Chironomid larvae and Diptera	All above species absent	1	2	3	4	
All above types absent	Some organisms not requiring dissolved oxygen may be present	0	1	2		

the quality of a river, the smaller organisms are often more informative since their fortunes could determine whether the larger species will be there or not. Even a small river will contain a considerable number and variety of macro-invertebrates and as the different species or groups of these small animals vary in their requirements for dissolved oxygen, a scale of water quality can be constructed based on their presence, absence and relative abundance. This scale of water quality is called a Biological Index which describes, very simply, the condition of the water at a particular site. The system used by the Forth River Purification Board is called the Trent Biotic Index of Pollution (see page 12). The index ranges from 10 which represents very clean conditions to 0 which represents sterile conditions.

Each of the following constitutes a group:

	<u>Group</u>	<u>Common name</u>
Each known species:	Annelida, Hirudinea	Leeches
	Mollusca	Snails, Limpets
	Crustacea	Shrimps, etc
	Megaloptera larvae	Alder flies
	Chironomus thummi	Bloodworms
	Platyhelminthes	Flatworms
Genera of:	Plecoptera nymphs	Stoneflies
	Ephemeroptera nymphs	Mayflies
	Nais	Worms
	Hydracarina	Water Mites
Families of:	Trichoptera larvae	Caddis flies
	Coleoptera larvae	Beetles and larvae
	Diptera	True flies (larvae)
	Annelida, Oligochaeta	Worms (except Nais)
	Chironomidae	Midge larvae (except C. thummi)

It was to see how this biological monitoring works that a party from the ENHS visited the Forth River Board's Colinton Laboratory, on 27 June 1979 and helped take and analyse samples from the Water of Leith as well as seeing something of more specialised techniques such as electric fishing. The purpose of this article is to provide a record of the visit for those who participated and a simple account of the work of the River Board's biologists.

To monitor a river successfully, the biologist needs to know the occurrence and distribution of the organisms. Factors such as the strength of current, the substrate, the acidity or alkalinity of the water, the vegetation on the banks and droughts or floods will all affect the fauna of the river

The standard technique for taking bottom fauna samples was devised by Dr. Macan of the Freshwater Biological Association, Windermere. This involves disturbing the river bed by kicking for approximately three minutes while holding a fine mesh hand-net directly behind and downstream of one's foot. The animals disturbed are swept into the net and constitute a sample. This sample is then returned to the laboratory where the animals caught are sorted and

identified. The Forth River Purification Board has eleven biological sampling stations on the Water of Leith from below Harperrig Reservoir down to Anderson Place.

The Water of Leith is normally a clean river for most of its length. Stonefly nymphs occur at most stations down as far as Slateford Road. Stoneflies are brownish coloured insects with long antennae, *two long tails* at the hind end, two-clawed feet and ten abdominal segments. They can vary in size from 2 or 3 mm to 3 or 4 cm. The older nymphs cling to the underside of flat stones - the quickest flowing part of the water. These nymphs appear at the top of the Biotic Index and their presence in a sample indicates the cleanest conditions in a river. The next group of invertebrates on the Index are the Mayfly nymphs which are similar to Stoneflies except they have *three tails* at the hind end and single-clawed feet. These can usually be found throughout the length of the Water of Leith, another indication that the river, although it runs through a major city, is in a relatively clean condition. Many of the other groups of invertebrates can be found at most points on the river in good numbers. The groups of organisms are in descending order for oxygen requirement, ie Stoneflies need higher oxygen concentrations in the water than Caddis larvae and Caddis larvae more than Snails and Asellus (Water Louse) which are similar in their requirements. As can be seen in the Index, there are exceptions to the general rule, eg one species of Stonefly can live at lower oxygen levels than the rest and so is classed along with the Mayflies. The same situation arises with one of the Mayflies.

Because the Water of Leith has a rich macro-invertebrate fauna, it has a good supply of fish, such as Brown Trout which require a high level of dissolved oxygen and a rich supply of food. Other fish, such as Stickleback, Minnow, Stoneloach and Bullhead can also be found in good numbers.

To assess the fish population, biologists use electric fishing techniques to catch the fish from a stretch of river. By passing electricity down an electrode placed in the river the fish are drawn towards it and stunned. These can then be caught in a net and transferred to containers where they quickly recover. After the stretch to be fished is covered, the trapped fish are identified, measured and released. This tells us not only the numbers and types of fish, but also gives an indication of whether the population is natural and breeding (this would show various lengths of fish), natural and not breeding (all similar size) or stocked from fish farms. Readers should note that this apparatus can only be used under special licence.

This article has described the current state of the Water of Leith and the river has been in this relatively healthy state for about the last 50 years. In historical times (the 18th, 19th and early 20th centuries) the river, like virtually every British river which ran for even part of its length through industrial or densely populated areas suffered gross pollution. Recent improvements have stemmed partly from legislation (Rivers, Prevention of Pollution, Scotland, Acts 1951-1965) that saw the creation of River Boards and from the decline of many of the industries which used to work on the river banks. There are now only five mills working on the Water of Leith compared to as many as 70 in the earlier years. Domestic sewage was also discharged crudely into the river in these times. Pollution affecting the river today nearly all stems from accidents such as chemical or

oil spillages and also from the national problem of rubbish dumping. Watercourses seem to attract people wishing to dispose of debris of all kinds. Construction work at or on the river sometimes causes temporary upset mainly arising from the disturbance of river bed and banks. Problems are increasingly found further downstream in the Forth Estuary where the new large scale industries of oil and petrochemicals now concern biologists.

E.S. da Prato
Forth River Purification Board

Acknowledgements

Mr. D.J. Lowson and Mr. J. Gellaitry of the Forth River Purification Board helped prepare this article which was typed by Miss K. Williamson.

WHAT DOES THE FUTURE HOLD FOR THE UNION CANAL?

Although the Union Canal was not officially closed to navigation until 1965, very shortly after its opening in 1822, it came into immediate competition from the new railways and as a result its economically profitable and useful life was very short. For a long time, therefore, through the lack of intensive use, minimal maintenance and even a degree of neglect in later years, the ecology of the Canal has developed and thrived relatively undisturbed, to become a rich ecological corridor and a valuable natural asset in the Lothians. It is the diversity of habitats that it represents that makes it of special importance. As a consequence, one stretch is included in a scheduled Site of Special Scientific Interest, listed by the Nature Conservancy Council.

The particular natural interest of the Canal is its slow moving fresh water, which is a rare habitat in a countryside more associated with fast running streams and rivers. On the offside bank, a marsh-land transition has been allowed to develop through the events of silt build-up and natural ecological succession. On the towpath side are grassland communities, with specialised close growing species on the path itself. Then there are the other associated habitats such as hedges, walls, ditches and woodlands, all semi-natural communities that provide a wealth of refuges for animals and plants.

In 1975, a Union Canal Development Group was set up by the Inland Waterways Board, to prepare detailed proposals for the development of the Canal for recreation, including of course boating. For the first time perhaps since the decline of the Canal's commercial use, opportunities for conserving and developing the Canal were to be investigated.

While the threat of public pressure that recreational promotion could bring to such a neglected resource must be recognised, it must also be considered that, as a semi-natural ecological system, nature, in time, would totally reclaim the habitats that we now recognise as being valuable. The present habitats would be lost as they develop through natural succession into other community types. The Canal would almost completely silt up and would eventually be invaded by willow and perhaps alder scrub through the drying up of the system. While still valuable as a natural resource, the rare, slow moving water habitat that now exists would be lost, and perhaps with the increasing

wildness that would develop the pressures to infill the Canal would increase as has occurred with totally neglected canals elsewhere.

It is therefore suggested that in the interests of the ecology of the habitat and perhaps of naturalists, a degree of use of the Canal should be stimulated provided that with it comes positive and beneficial management with conservation of the wildlife resource. In the report of the Development Group, published in 1977, the necessity for compromise in the development of recreational use in relation to the wildlife, and the irreplaceable amenity value that this brings, was identified as a consideration in any development that would be promoted.

With recreation planners looking at the Canal for development opportunities, it was decided that more information was needed on the ecological value of the corridor and in 1976, it became possible to employ a team of experienced graduate biologists to carry out an extensive survey of the 17-mile Lothian stretch. The aim was to provide information on the conservation values of the Canal, to give planning and recreation departments information which would allow developments to take place in those areas that would not jeopardise the more valuable habitats. In addition, it was intended to identify 'conservation' stretches for those parts of greatest ecological value, and to draft management guidelines that should be adopted to aid conservation objectives, especially in these valuable areas.

The survey report, published by the Regional Council, Department of Physical Planning, confirmed that although the majority of species that inhabit the Canal and its banks are neither unique or rare, it is remarkably rich with over 240 higher plant species, including a few notable records. Of the most interesting discoveries amongst the 78 species of invertebrates recorded from the Canal itself, was a leech never before reported from Scotland.

With this factual evidence it becomes easier for the ecologist to argue on matters of conservation and as such this report, although deficient on certain aspects, has proved invaluable to successive policy and planning matters that have arisen as the support and pressure for opening up the Canal for recreation has increased. The Canal is now seen by some as having a unique potential for recreation and tourism, and in 1978 it became a policy of the Lothian Recreation Department to develop and promote the Canal as a Regional recreational facility. This was endorsed in the Region's Structure Plan, also published in 1978, which supported the development of its recreational and tourist potential. But, as a point of reservation, the Plan also states that in doing this, the Regional Council is aware of the need to reconcile any recreational use with the conservation of wildlife.

It is therefore important to be alert to this new development and to ensure that in all matters related to this the conservation of the wildlife is given due consideration. After all the amenity value of the Canal is greatly enhanced by its rural character and the wildlife quality, which creates this. To develop it on urban standards would not only do great harm to the wildlife but also destroy its character and beauty. As a consequence, the amenity value would be lost for the large numbers of people that now enjoy it as an escape to the countryside.

Over the last year several major events have occurred which relate to the new interest in the Canal. It is now scheduled, in its entirety

as an Ancient Monument, and plans to cut it in the building of the Edinburgh ring road have been rejected in preference for a viaduct principally because of the new recreational interest of using the water course for recreation.

Early in 1979, in collaboration with the Countryside Commission for Scotland, the Lothian Region's Recreation Department and the Planning Department of Central Regional Council appointed a Project Officer. The three-year role identified for Jane Clarke, who took up the appointment, is to identify and promote at the local level interest in the participation and development of the Canal in recreation, leisure and amenity. She had previously worked with Somerset County Council on the problems of the Somerset Levels and is therefore well-qualified in dealing with the conservation problems involved with a Canal.

More volunteer groups are being established in built-up areas through which the Canal flows, with the aim of developing its recreational role for the community. Boating use is on the increase and with this has come the pressure for extensive dredging. This aspect, if carried out thoroughly from bank to bank, would destroy habitats and upset the balance that now exists for many wildlife forms. The restriction of dredging to the centre and towpath side is a compromise which is being adopted by the Waterways Board as a matter of policy. Yet, problems of silt disposal, the damage created by land based dredges and the interference with habitats beyond the water have arisen and subsequently been discussed with the Board. As a result, better liaison has been established, better control of management works has been agreed and more effective co-ordination and guidance of volunteer groups in their Canal works, is being sought. Clean-ups and improvement works can be too enthusiastic with no practical benefits in the end. With more informed advice these works can take place with little influence on the ecology of the Canal. In the long term perhaps a ranger service will be created to continue the work of the Project Officer, to ensure that the standards being established will continue.

Hopefully, the future of the Canal is secured and its wildlife will be conserved and managed with sensitivity. There will be change but this must take place with due consideration to all interests. The Canal is a man-made feature adopted by nature and in its 'reclamation' for a new role a place must be retained for its wildlife.

Dr. J.C. Sheldon
Regional Ecologist

If you have matters of concern, or you are interested in certain aspects of the Canal and its future, please raise them with either Jane Clarke, Project Officer, Port Edgar, South Queensferry (Tel: 331 2620) or Dr. J.C. Sheldon, Department of Physical Planning, Lothian Regional Council (Tel: 229 9292).

A limited number of copies of the 'Biological Survey of the Union Canal' are still available from Dr. Sheldon.

YOC/ENHS WATER OF LEITH SURVEY 1978

The water of Leith runs for some ten twisting miles through the City of Edinburgh creating a very valuable 'green finger' which provides a city sanctuary for many forms of wildlife. It was for this reason that the Edinburgh YOC in conjunction with the ENHS undertook a survey of the birds of the river in an effort to find out to what extent birds use the river, to obtain accurate numbers of the species present and if possible to calculate the breeding populations of some of the birds.

Thirty-four observation points along the course of the river, from Balerno to Leith, were chosen and these were manned, with the help of the many members throughout the city, with two observers stationed at each point. The observers were to record the movements of all birds along the river, and in particular those of three species especially associated with rivers: Dipper, Grey Wagtail and Moorhen, giving the times of appearance and disappearance, the direction of movement and any other observations. With these records it was hoped to work out accurate breeding populations for these 'primary' species and to obtain a good idea of the numbers of other species present.

The survey took place on Sunday, 7 May (repeated Sunday, 8 October) with a stationary watch being kept from 7 - 8 am at each point by both observers. At 8 am one of each pair walked upstream to the next point covering the intervening stretch.

The Dipper

The Dipper is one of the most characteristic birds to be found on the river; its fast rapid flight, noisy behaviour and conspicuous white breast makes identification easy. The fast flowing river and its many weirs provide it with an ideal habitat, so it came as no surprise that many of the observers found it present. From above the Slateford bridge the river is particularly suitable for the Dipper, with many good feeding places and, most important, many safe nesting places in the often steep banks and the numerous old walls along its way. In fact this bird was recorded at every one of the observation sites above the Slateford bridge in both the May and October surveys. Below Slateford the Dipper is only likely to be encountered at the Dean village, where the physical form of the river and its banks are similar to the stretches upstream where it is common.

Some interesting results arose from the May survey where the Dipper was recorded at 18 out of the 34 observation points. With the information supplied by the observers, such as clashes between neighbouring male birds (most of the females would be on the nest at this time of year), we were able to calculate that between 10 and 12 pairs bred along the river.

The October survey provided an interesting, if expected, contrast to the May survey. At each of the observation points there was a dramatic increase in the number of Dipper sightings. For instance, at Observation Point 27, near Kinleith Mill, between Currie and Juniper Green, where only one Dipper was seen during the hour long observation period in May, five sightings were recorded during the same period in October. In general this pattern was repeated along the whole course of the river where there was a marked increase in the number of birds seen in the October survey. A total of 29 birds has been estimated.

This can be explained by the additional number of young and the females which were on the nest when the May survey was undertaken. With this difference between the October and May populations the Dipper obviously suffers a high winter mortality rate. It is clear from this survey that the Dipper population is on the whole sedentary with the sightings once again confined largely to the section above Slateford bridge.

The Grey Wagtail

Like the Dipper, the Grey Wagtail favours fast flowing rivers with rocks and weirs and therefore the Water of Leith provides a perfect habitat for it. However, the distribution of the Grey Wagtail is not as straightforward as the Dipper and despite the fact that the main concentrations lie above the Slateford bridge with another population between Roseburn and Dean Bridge, its distribution is patchy compared to that of the Dipper.

Colinton Dell, the stretch between Slateford and Colinton Village, is the species' main stronghold along the river with three pairs holding territory. The patchy distribution upstream is curious, with only four out of the 11 observation points recording the species in both May and October in what appears to be a perfectly suitable habitat. Several isolated reports of single birds in areas where no others had been recorded probably refer to foraging birds as the Grey Wagtail is much less confined to the river than the Dipper. A total of seven or eight pairs of Grey Wagtails below Balerno was calculated.

Once again there was a considerable change in the numbers of birds seen in the October survey compared with those seen in the May survey. A minimum of 55 birds was estimated. However, this was not, as was the case with the Dipper, due only to the addition of young and of females but also due to the fact that the Grey Wagtail is less sedentary than the Dipper. Birds that had bred in the higher hill streams move downstream to spend the winter where the rivers are less likely to freeze over. In fact in the October survey the Grey Wagtail was recorded along the whole length of the river right down to the docks at Leith. Once again we see the patchy distribution and in particular this is highlighted above Currie.

The Moorhen

The Moorhen favours slow moving water with a lot of cover for nesting and so its distribution along the Water of Leith is very patchy and confined mainly to the lower reaches of the river. Its skulking habits made the observers' job of locating it very difficult indeed and the lack of correlation between the distribution of sightings in May and October underlines this.

In May the Moorhen was recorded at six sites, each isolated from the others and therefore suggesting that the sightings were not linked together. Indeed, several of the observers reported that the birds remained in sight throughout the duration of the survey and most of the reports referred to pairs. This would give a population of at least six pairs considering that other Moorhens could have been overlooked elsewhere. The probability of under-recording was highlighted when the October survey showed that moorhens were recorded in twice as many sites as in May with a total of 25 birds. This could partially be explained by winter birds and young but the distribution between

Roseburn and Leith recorded in October suggests that a larger population is present there than had been recorded in May.

Other species

Another species which is commonly encountered along the river is the Mallard. During early spring it is possible to come across pairs on the river and most of the May records refer to breeding birds which use the steep-sided river valley as a safe nesting place. Indeed, almost all of the observation sites, especially those further upstream, recorded the Mallard. The October survey showed the Mallard to be scarce along the river with very few seen upstream from the Slateford bridge. However, they were relatively common in the more open stretches of water downstream where flocks of up to ten birds were recorded.

In the winter, another bird which is regularly to be seen is the Heron. Thirteen observers, reporting the Heron, show it to be a common visitor to the river, especially in the early morning. However, it was only reported from above Currie in the May survey.

Of the other river species recorded during the two surveys, pride of place must surely go to the Kingfisher which was recorded upstream from the Newhaven Road, Leith and at Rocheid Path, Warriston. Although these records probably refer to the same bird it is pleasing to see this colourful bird back on the river. A single Common Sandpiper, although present on the river upstream from Balerno, was recorded at Currie Bridge and this record obviously refers to a migrant bird. Another well-known feature on the river is the flock of Mute Swans at the river's mouth at Leith. This consists of non-breeding birds, mainly young birds, in May numbering ten and in October, seven.

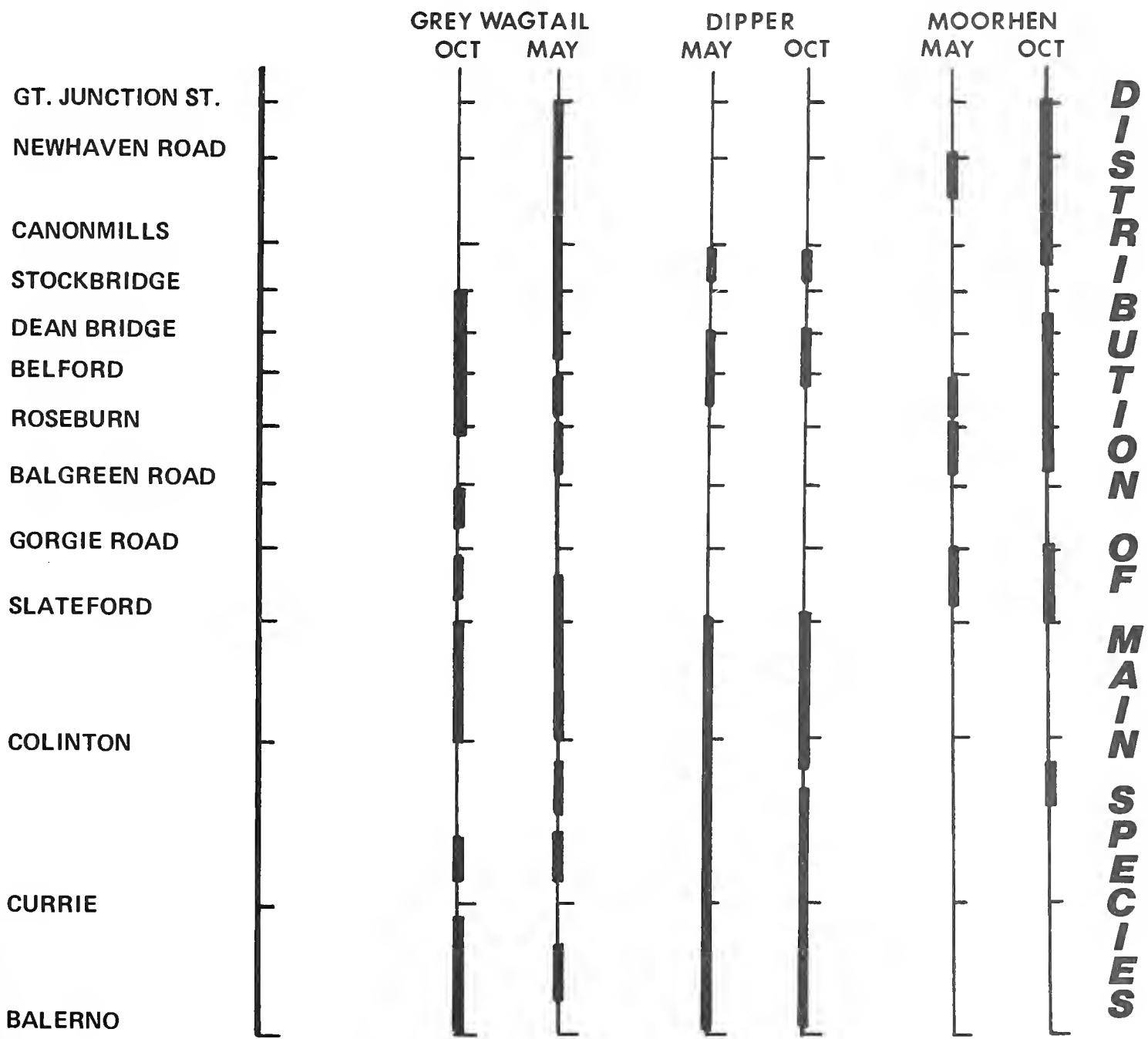
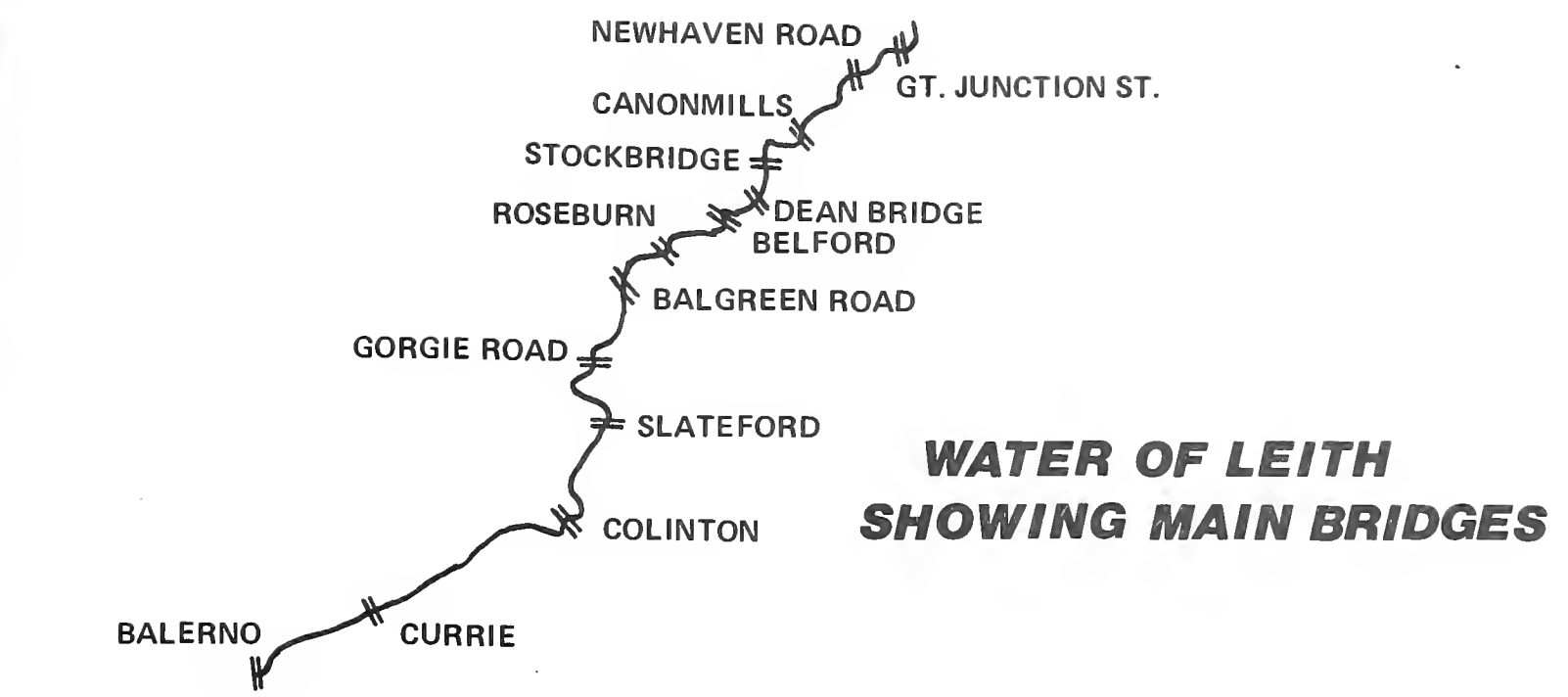
With the observers having to concentrate on the primary river species it was felt that recording the other species to be seen from the observation sites would not only be very difficult but the results obtained would give a false picture. While much information on other species was obtained it was not felt that this type of co-ordinated count over a short period was the best way of providing a definitive account of the entire bird population in a river valley of varying width and arbitrary limits.

Members were asked to make any mammal sightings but no significant records were obtained.

Conclusion

This was the first major survey the Edinburgh YOC had undertaken and was, therefore, on the whole an experimental one. However, despite this we were able to include a large proportion of Club members. Therefore not only were we able to obtain information about bird populations, but the members were able to participate in a constructive way. We encountered few problems in respect of observers manning the observation sites and coverage of the river was as complete as it could have been, although the October survey suffered from poor light which somewhat restricted observations at the start of the hour-long vigil.

It would be interesting to compare the results obtained with those of others, although we have been unable to find any comparable information. However, the main value will come with a repeat survey



DISTRIBUTION OF MAIN SPECIES

in, perhaps, five years' time. With this it would be possible to make a constructive comparison and the five year time lapse would be long enough to detect any trends in the bird population.

M. Porteous

FORTH ISLAND BIRD COUNT 1979

	Inchmickery/Islets	Inchkeith	Fidra	Lamb	Craigleith
Fulmar		523	101	3	57
Cormorant	32			65	98
Shag	14	4	25	160	215
Mallard	6+				2
Eider	4			1	96
Greater Bl Back			1		1
Kittiwake		(236)	258	68	510
Common Tern	500				
Roseate Tern	40				
Sandwich Tern	604				
Razorbill		23	17	20	64
Guillemot		5	20	860	1480 bds
Puffin		660	100		1150

Fulmar - occupied sites not necessarily breeding
 Craigleith Guillemots - birds on breeding cliffs
 Puffin - all birds on land or offshore
 All others - pairs or nests

Inchmickery counts by permission of the RSPB

Fortune smiled briefly for the 21st anniversary of the island counts and all the landings were made on the appointed days - although with Craigleith it was touch and go! A small party visited Inchkeith for the count but Inchmickery and the islets of Haystack and Carr Craig were missed out this year because of the difficulty of getting a boat. In 1978 there were 32 pairs of Shags breeding on the two latter rocks but otherwise there is little there that is relevant to the counts.

Our 21st year seems a good time to question the purpose of the counts and the validity of the figures obtained. One annual visit to a breeding seabird colony obviously gives only a minimum of information. It is possible to make a very accurate count of nests of Shags and Cormorants, and maximum counts can be made in June. But what about those nests which were there in May and have disappeared by June? Some of these pairs may have rebuilt and be included in the count while others will have been missed. Some nests will have lost their eggs and second or late nests may still have no eggs. In the counts all well-built nests are included whether empty or otherwise and it seems most likely that a count represents an absolute minimum of breeding pairs.

On this basis most counts made in June of Cormorants, Shags and Kittiwakes can usually be compared from year to year. There are two exceptions to this:

1. Kittiwake nest counts made from a boat where there is no time to check counts,
2. the rare occasions when nests have been deserted for some unknown reason as with Kittiwakes on Inchkeith this year.

Birds, such as auks, which do not build nests are more difficult. The Guillemot, our most numerous auk, sits tight-packed on ledges and there is some doubt as to exactly what a count of adults on the breeding cliffs represents in the way of breeding pairs. Many will have lost eggs or young and some may already have deserted the cliffs for this reason. Of the remainder, many will be brooding an egg or a chick while others seem to be just sitting about. However, if one can examine a group closely, it is not too difficult to see which birds are brooding eggs or chicks and a count of those will give a minimum of breeding pairs. By June there will have been many losses so a count of this nature, however accurate (and this is not always possible in a crowded colony), will give a figure which may be anything from 5 - 25 per cent too low for the breeding population. So the margin of error can be considerable. However, over a period of some years, any definite trend of increase or decrease is unmistakable and annual counts are certainly more comparable than one might suppose from the consideration of any one count!

Guillemots on the Lamb are a good example. A single bird was sitting (probably on an egg) in 1963 and by 1969 there were 97 birds that had eggs or young. The numbers breeding have increased steadily and some 860 birds were thought to have eggs or chicks this year. Taking into account the number of failed breeders there could be nearer 1000 pairs on this rock alone. But this crude minimum of 860 pairs compared to a minimum of 97 pairs ten years earlier does show an increase on the island of the order of 20 per cent per year. Variations due to counting errors or the effects of weather on breeding success tend to level out with regular yearly counts and do not obscure any obvious increase or decrease in the breeding population.

This year Fulmar sites on Fidra and Inchkeith have reached new peaks while Shag numbers on the East Lothian islands have increased by some 7 per cent after several years of decline. There does appear to be a slight increase with Shags in Inner Forth but some of the most significant islands were not visited. Cormorants are still buoyant with 36 nests on Eyebroughty and 32 on Cow and Calves - and both places producing good numbers of fledged young. However, the total of 231 nests is still about average for the past ten years in Forth.

Kittiwakes pose a problem with numbers down again on Inchkeith and many of the apparently used nests unoccupied or with a single (probably non-breeding) bird and no eggs or young. Did some birds lay eggs and then desert later? It is possible that there was a spell when food was in short supply but it does not seem to have affected the East Lothian islands where there has been a small increase this year. Basically, it was a generally satisfactory year apart from Inchmickery where, although Common and Sandwich Terns are in good numbers, the RSPB report another decrease in the Roseate Tern colony. Disturbance at Inchmickery is kept to an absolute minimum and fledging success of Roseates is usually good, yet only 40 pairs bred compared to 51 last year. Probably there is little more one can do for this species in the British breeding colonies and any improvement in the situation would have to be achieved in the West African wintering areas where heavy predation by humans is reported.

And what of the future? Not unexpectedly it seems that, even after 21 years, we can always find a reason for counting for just another year!

R.W.J. Smith

'GOOD YEAR' FOR TERNS

At most terneries, the tide plays a major role in the success or failure of the breeding season, but now various methods of unobtrusive management are being developed to help avert at least some disasters. The eggs and surrounding pieces of seashells can be moved a short distance each day for a week before a high tide is due or eggs can be lifted before the tide covers the nesting grounds.

Another method which was attempted recently was making use of car tyres washed up along the shoreline by filling these with sand, placing the nest and eggs on top and positioning the tyre in exactly the same nesting site. This was done by making use of a flat thin piece of wood which was carefully pushed underneath each scrape in order to lift each nest and contents onto the raised tyre platform.

The idea was originally thought of with Little Terns in mind; but the experiment was carried out with nests of Arctic Terns. Five tyres were used and after some hesitation four pairs began to incubate again. Most birds hovered over their site calling anxiously then landed a foot or so from the tyre. Eventually they plucked up enough courage to settle on the tyre then rearranged the shells and small pieces of wood which surrounded the nests. Two of the birds settled in so comfortably that only the head and tail were visible. At a later date, when another pair of Arctics nested in a vulnerable position near the tideline, the nest was relocated to the fifth tyre and the birds accepted their new 'high rise' home.

I have never been fully in favour of the gradual movement of nests away from the tideline as the final nesting position could easily be in the territory of another pair of terns and thus would cause domestic upsets which could influence nesting success. The lifting of eggs prior to the high tide reaching the nest sites can often prove to be impracticable when the intruding tide encroaches at two o'clock on a wet June morning. So the use of these tyres when readily available could be made acceptable in seasons to come. With the present experiment, after a high tide with wave action, only two of the nests remained intact. All the tyres were moved up the beach; but still short of the main nesting territories, and the three which did not survive, succumbed owing to the waves actually breaking over the tops of the tyres from which the eggs were washed out. A hundred per cent success would have been achieved from a slowly advancing tide with no strong wind action behind it. It is intended to position tyres filled with sand along the nesting tideline in the future to see if the birds can be attracted to these artificial sites.

R.G. Nisbet

BIRDWATCHING HIGHLIGHTS IN SCOTLAND 1978-1979

- 8.11.78 Peregrine Falcon chasing the geese at Gladhouse Reservoir - without much success!
8. 2.79 Eight Barnacle Geese on the estuary at Tynninghame.
3. 3.79 Thirteen 'pink fronted' Dunlin at Cramond, in a large flock of others (later discovered to be part of a scientific study of waders in the Forth).
- 7./
10. 3.79 A very tame Shoveler at St. Margaret's Loch, feeding beside the many Mallard.
24. 3.79 Two Red-necked Grebes close inshore at Gosford.
5. 4.79 A Water Rail - usually a secretive bird - feeding openly on the side of Morton Loch, occasionally letting out a rather spine-chilling scream.
26. 4.79 Three Gadwall on Morton Lochs.
1. 5.79 Three Red-throated Divers, in summer plumage, their velvet-grey heads standing out in the sun, close to the Lagoon wall at Musselburgh.
6. 5.79 A Red-legged Partridge running across a field at Rosebery Reservoir.
14. 5.79 A female Pied Flycatcher at Blackford Hill.
21. 5.79 Wood Warblers trilling in the beeches at Roslin.
22. 5.79 A Blackcap on a tree overhead, warbling a spring song at Blackford Hill.
18. 6.79 Chiffchaffs calling in Colinton Dell.
1. 7.79 Three Ptarmigan running over the rocks on Ben Lawers, and although close up, almost invisible unless they moved.
7. 7.79 Several Black-necked Grebes feeding young on a reed-lined loch.
- 11./
14. 7.79 Whinchats everywhere in a Cheviot valley.
25. 7.79 Whimbrels calling overhead at Barns Ness.
2. 8.79 A female Marsh Harrier quartering in the reed beds at Morton Lochs.
3. 8.79 Two Yellow Wagtails at Musselburgh Lagoons.
10. 8.79 A Corn Bunting 'jingling' on the wires at Barns Ness.
28. 8.79 Eight Ruff at Musselburgh Lagoons
30. 8.79 Six Sanderling puddling in the mud at Tynninghame.
10. 9.79 Crossbills busy in the cones at Glen Clova car park; and a young Golden Eagle flying low overhead at Glen Cally.
14. 9.79 A Hen Harrier hunting in Glen Esk.
- 13./
16. 9.79 A rare Lesser Yellowlegs blown from America to Montrose Basin in a westerly gale.
17. 9.79 A Kestrel, a Peregrine Falcon, a Common Buzzard and a Rough-legged Buzzard all seen hunting in Glen Lethnot in the course of one hour, and five Capercaillie in a forest near Edzell.

23. 9.79 A solitary Snow Bunting feeding busily on the grass at Aberlady, oblivious of over thirty ornithologists! ... and a Black Redstart just arrived at Gullane point.
26. 9.79 Ten Goosander preening themselves on the shore of Gladhouse Reservoir.
29. 9.79 Two elegant Black-tailed Godwits feeding close to the main road at Aberlady, and two Spotted Redshanks calling as they flew past.
- 2.10.79 Two Yellow-browed Warblers and a Pied Flycatcher disappearing into a thick fog at St. Abb's; and Redwing and Brambling coming in from the sea, perhaps heralding the approach of winter.

M. Mowat

DUTCH ELM DISEASE IN THE LOTHIAN 1979

[Note - Dr. John Sheldon wrote about the 'Dutch Elm Disease in the Lothians' in detail in both the 1977 ENHS Journal (see page 7) and the 1978 ENHS Journal (see page 7). In the short article below, Dr. Sheldon brings readers up-to-date with the state of the disease at the end of summer 1979.]

The loss of elms through Dutch Elm disease infection is now a permanent problem in the Lothians. Outbreaks have been identified in almost every part of the region although it is in Edinburgh that the greatest impact is being made because of the importance of the elm in the City landscape.

In previous years there has been a steady increase in disease outbreaks. This year, however, there has been a hiccup in the pattern and by the end of the season it is clear that fewer outbreaks have occurred. There are two reasons for this. First is the fact that the disease control measures of previous years have removed a large number of breeding grounds of the *Scolytus* beetle, which carries the disease, and potential new breeding grounds that would have been provided if diseased trees had been left standing. Secondly, although our cold winters are not sufficiently intense to push the northerly geographic limit of the beetle to the warmer south, a cold summer can significantly reduce its activity. This season, with a cold late spring followed by a dismal summer, the beetles appear to have been delayed in maturing and flying out of their breeding grounds. In fact, throughout the season the disease pattern was 4-6 weeks behind its normal behaviour and the beetles would appear to have been less adventurous, remaining close to woodland breeding grounds and feeding on more local trees.

The very short season has therefore meant fewer outbreaks and about 200 trees have been lost in the city compared with almost 400 in 1978. The majority of outbreaks took place in areas where the beetle is well lodged, especially in the woodland areas such as Corstorphine Hill and The Hermitage, where all its breeding grounds are very difficult to trace. While individual trees have been infected in the Meadows, the New Town, Duddingston, along the Water of Leith and the Union Canal, amongst some of the most notable locations outbreaks have been very scattered and some were obvious late infections of the previous season which could not be detected as autumnal leaf colour changes set in.

It is perhaps just a hiccup in the disease progress since a hot summer in 1980 could re-establish a high beetle activity. Possibly, however, the breeding population of beetles has been reduced because of the weather and it could take some time to re-establish. Another cold summer could obviously be a great aid in controlling the disease but it is too soon to be optimistic and our summers are unpredictable. An important feature is, however, that a combination of strict control and bad summer weather will prolong the effects of the disease on our elms. This gives time to replant with other species and stalls the disastrous consequences that the disease can have on elm dominated landscapes, as is very obvious in other parts of Great Britain. Now, when disease infections have been reduced it becomes more important than ever to report any suspected disease outbreak to the local authority.

Dr. J.C. Sheldon
 Authorised Officer
 Dutch Elm Disease Control
 Lothian Region

(Tel. No. 031-229 9292)

THE HOPETOUN HOUSE NATURE TRAIL

Genesis

In 1969, five members of the Scottish Wildlife Trust Lothians Branch, on behalf of the Hopetoun House Preservation Trust, planned a 14-post nature trail in the grounds of Hopetoun House. One of that team was our own Mr. Joe Carlyle. They also prepared the trail booklet, 'Habitat'. There was no change until 1977 when the Estate Manager, Mr. J. Douglas-Menzies had the idea to employ a Nature Trail Ranger, grant-aided by the Countryside Commission for Scotland. At a Branch meeting in the summer of 1977, I learned of this and applied for the post. The outcome of a meeting in November 1977 was an undertaking by me to recruit staff to manage the trail and establish a wildlife exhibition.

Before the Easter opening in late March 1978, Mr. Carlyle and I were in post, and the nucleus of an exhibition was gathered. By the time the season started the outer tack-room in the stable courtyard was painted and our third member, Mrs. Isobel Maclean, had joined us. Early on we established our routines, shifts, log-book and many other details. Matters have continued with very little change throughout the second season.

The Trail

The Trail is some 2½ miles long and takes about 2 - 3 hours to cover fully: one can do it on one's own, using a Trail Guide, or one can accept the services of a Ranger - the latter is preferable. Many people do not want to do the full trail but are content to be shown the Red Deer herd and enough other items of interest to occupy an hour.

The Red Deer Herd

Counting in 1977 proved that there were 21 deer - five stags plus 16 hinds and calves. Later, four of these sprouted small antlers so we knew we had nine stags and 12 hinds. In early June 1978, seven calves were born giving a total at the beginning of the winter of 28 deer. Two were lost during the hard winter and later ten calves were

born in early summer. We anticipate some thinning in the winter as 25 seems a reasonable number on 25 acres of ground. No one can say authoritatively when the herd was introduced but it is reputed that they have been there for at least a hundred years.

Habitats

The first guide was named 'Habitat' and dealt rather fully with this aspect. Post No. 9 was created to show the visitor the four main habitats visible from this outlook. These are: 1) mixed woodland, 2) parkland, 3) shrubland, and 4) shore. There are in addition several micro-habitats such as the Sweet Chestnut log at No. 3, the wallows in the North Deer Park, the limestone wall from No. 13 to No. 14, a little piece of saltmarsh, the Midhope Burn and the Round Pond.

The Exhibition

Our efforts in 1978 to set up a small exhibition based on items found on the trail and in the Trust grounds met with some praise. We endeavoured to include items that would be of interest to children. During the winter of 1978-79, with assistance from the CCS, soft board panelling and track lighting was installed but the actual exhibition is basically unchanged. The adjoining room, the 'Howff' - now decorated, furnished and equipped - serves as a restroom, office, kitchen, storeroom and workshop. Its facilities are greatly appreciated by the Rangers.

Recording

Though not included in our original remit, the opportunity to do some natural history recording was too good to miss. The Trust grounds cover some 100 acres, and already 'Monkswood' cards for flowering plants, Mosses, Lichens, Liverworts and Fungi, birds and other vertebrates have been sent to the Biological Records Centre at the Institute of Terrestrial Ecology.

Developments

As employees of the Hopetoun House Preservation Trust we are subject to such decisions and policies as the Trustees may make. We have on request produced a new Trail Guide based on our first year's experience of guiding the public. We hope to continue our work as Ranger-Naturalists and to build up as complete a picture as possible of the natural history of the Trust grounds.

To those of you who have never been to Hopetoun House we suggest you should try the experience.

C.P. Rawcliffe
Ranger

Some observations made in Hopetoun House Grounds

- 17.11.78 One Common Buzzard (*Buteo buteo*), mobbed by Kestrel (*Falco tinnunculus*).
- 14. 5.79 Water Cricket (*Velia caprai*), male and female, taken on small pool in the North Deer Park.

22.7.79 Just above the bridge nearest to the mouth of Midhope Burn was a small Flounder (*Platichys flesus*), c 4½ in. (115 mm) long; this was our first record.

5.8.79 Two juvenile Green Woodpeckers seen.

22.8.79 Black Horehound (*Ballota nigra*) flowering. It grows in two places; it is recorded in 'The Field-Club Flora of the Lothians' but not from this area.

30.8.79 Whilst pond dipping at the 'Gullets', the firedams in the South Deer Park at Hopetoun House, in company with Mrs. E. Gillespie we witnessed the following: there were on the water three juvenile Mallard which moved away from us as we progressed round the perimeter. Seeing a body moving under the water I imagined that I was watching an extra large fish. It was very quickly apparent that it was one of the mallard juveniles which travelled several yards and then partly surfaced among the Broad-leaved Pondweed. Only the bill and head showed. I signalled to my companion and together we watched the head quietly withdraw and the underwater swim take place. This manouvre was repeated. I did not see any wing movement. (The ability of the mallard to swim under water is referred to in 'The Handbook of British Birds' and also in 'The Birds of the British Isles' by T.A. Coward.)

1978/ The following Woodlice (*Crustacea*) were collected at
1979 Hopetoun House Grounds and identified by Dr. A. Sommerville: *Trichoniscus pusillus*, *Oniscus asellus*, *Porcellio scaber*, *Philoscia muscorum* and *Androniscus dentiger*. *Androniscus dentiger* is uncommon in the Lothians.

C. Rawcliffe

WITHIN THE GROUNDS OF THE CITY HOSPITAL

A hospital for infectious diseases does not sound a particularly attractive place to go botanising but when I explored the grounds of the City Hospital, Edinburgh, between the 9th and 18th of June, I was agreeably surprised by what I found there.

The hospital was built in the reign of Edward VII and the surrounding woods and gardens must have been very carefully planned. They include several large triangular fields now entirely surrounded by mature trees which give a great sense of space, and perhaps appropriately, of isolation from the outside world. Three-quarters of a century after they were planted the woods have never been thinned out: the trees are choking each other for light. The shrubberies are dense tangles of Nettles, Rhododendrons, Laurel, Lilac and occasionally a self-seeded Oregon Grape. Rectangular patches of long grass, Dock and Sheep's Sorrel mark what were presumably flowerbeds in a mass of Meadow and Creeping Buttercup.

The woods are crossed by a number of paths and the ground under the trees was a dense carpet of white Pink Purslane (*Montia sibirica*). There were several acres of it - a really beautiful sight - and here and there a clump of pink Pink Purslane was growing, but only the very palest shade of pink.

The hedgerows and paths round the hospital contained many common and less common wild flowers: Shepherd's Purse (*Capsella bursa-pastoris*),

Hairy Bittercress (*Cardamine hirsuta*), Hogweed (*Heracleum sphondylium*), Wall Speedwell (*Veronica arvensis*), Yarrow (*Achillea millefolium*), Groundsel (*Senecio vulgaris* var *radiatus*) - the variety with a circle of ray florets - Orange Hawkweed (*Hieracium aurantiacum*), Smooth Sow-thistle (*Sonchus oleraceus*) and Bluebell (*Endymion non-scriptus*).

A bank with a southern exposure was a striking mass of Ox-eye Daisy (*Leucanthemum valgare*), Black Medick (*Medicago lupulina*), White Clover (*Trifolium repens*) and Mouse-ear Hawkweed (*Hieracium pilosella*). I was delighted to find two small patches of Jacob's Ladder (*Polemonium caeruleum*), both blue and white forms, with its characteristic sweet heavy scent.

There was Common Fumitory (*Fumaria officinalis*) growing on a recent heap of cinders by the boiler house. A patch of waste ground nearby was a mass of Common Vetch (*Vicia sativa*), and in the middle of it grew a well-formed Columbine (*Aquilegia vulgaris*). All round the hospital the lawns were a blue froth of Slender Speedwell (*Veronica filiformis*).

So perhaps even if the grounds are not as they were originally planned, lack of money and manpower has still produced benefits: the beauty resulting from neglect and isolation.

H. Thom

HEDGEHOGS

It was sometime in June that laziness to draw the curtains at nightfall led to us first noticing a hedgehog in the back garden. It showed up well in the light streaming from the window. It nosed around and, in true Mrs. Tiggywinkle fashion, zigzagged with many pauses up the garden and out of sight. We hurried to put out a saucer of bread and milk. Every evening since then, till we stopped the supply of food early in October, one or more hedgehogs nightly visited the garden and ate the food. The curtains during this time were never drawn. On fine evenings the neighbours, from their upstairs windows, would often watch with interest the ongoings in the Smith's garden. The dish of food was regularly put about the same place on the grass between the window and a small pond. Our hedgehog visitors never ran directly to the dish but tacked about as though sniffing and testing the surroundings first. Soon we came to recognize hedgehog droppings - soft black 'sausages' about half an inch long. At first the hedgehog would arrive about 10 pm but as the season advanced and the nights drew in so it appeared earlier. On two occasions it appeared about mid-day and drank from one of the tiny pools in the garden. The weather was dry and warm at the time.

During the first few visits that we witnessed, it spent a lot of time scratching itself. It used a hind leg and this appeared to be surprisingly long and slender as it combed over the laid-down prickles of its head, side and back.

Half a slice of bread and about a cupful of milk were more than a hedgehog consumed at one 'sitting'. Most of the milk was lapped up first. Sometimes the hedgehog got its front feet in the dish and the wobbling up and down of the white dish in the dark was often our first

indication that a hedgehog was there. During very strong winds the dish was blown over and the hedgehog was seen pushing its snout underneath and levering up the dish to get at the food below.

One evening there were two hedgehogs. The newcomer seemed larger and it approached hesitantly. No. 1, at the plate, reacted aggressively by facing No. 2, jerking its head from side to side and 'barking'. No. 2 approached, kept at a safe distance and followed a zig-zag route round No. 1. Eventually No. 1, having had some food between-times, ran off up the garden followed at a distance by No. 2 who was apparently more interested in Hedgehog No. 1 than a free meal. On the days following, sometimes No. 1 appeared first and sometimes No. 2. Less aggression was apparent on the part of No. 1, but she (we assumed No. 1 was female and No. 2 a male) still faced No. 2 and barked whenever he got close. One one occasion both were seen feeding from the dish together.

No. 3 first appeared on 1st August. The female was feeding and the male had approached to about a foot away from her when a third, smaller hedgehog, appeared about two yards away. The male immediately charged No. 3 who curled into a ball with spines erected. No. 1 moved off and No. 2 followed but No. 3 uncurled slowly and started to cross the grass. No. 2 returned and chased No. 3 backwards down the garden and butted it into the walled trough at the edge of the grass where it curled up again. The uncurling, approach and chase, were repeated, but this time the backwards retreating hedgehog fell in the pond. A few seconds later it had swum ashore and climbed out. Meanwhile No. 2, still chasing, ran along the side of the pond and it too fell in!

Subsequently no more than two hedgehogs were seen at any one time though all three were liable to appear during any evening. The first always left after drinking most of the milk and perhaps eating some bread. It wandered up the garden and possibly further afield, not returning for half an hour or so. Meanwhile, from another direction, a second often appeared. In the morning the plate was invariably empty and muddy marks in it were a sure indication that a hedgehog had polished off the remaining food.

On 8th August we noticed No. 1 in the dish and No. 2 close by, apparently sniffing the rear of No. 1. A few days later No. 2 was seen circling No. 1 but this time No. 1 did not keep turning to face No. 2. Occasionally No. 2 got behind No. 1 and attempted to mount. Each time No. 1 barked and jerked her head round and moved off. She stopped soon and No. 2 followed and circled close up to her again and once more was seen to attempt to mount. Although we waited and watched with interest no young were seen later. Perhaps better luck will befall them next year.

E.M. Smith

AN INTRODUCTION TO SAWFLIES

Members of the Society may have noticed my interest in a group of insects which are popularly termed 'sawflies'. Since the majority of non-entomologist naturalists know very little about these rather obscure animals, I have written this very generalised account to provide a background for the more detailed observations that sometimes appear in the Journal.

Perhaps the single most important thing to realise about a 'sawfly' is that it is not related in any way to the true flies, technically termed the Order Diptera. The 'fly' part of the vernacular name is misleading and means the same as the 'fly' in the words 'Dragonfly', 'Greenfly' etc. The sawflies really belong in the vast Order Hymenoptera (distinguished from the Diptera by having four fully developed wings, instead of only two in Diptera). The Hymenoptera contains very roughly 10,000 British species showing a vast range of morphological and biological variety. Some of the other important Hymenopteran groups are the Chalcids (minute parasites of other insects), Ichneumons and Braconids (larger parasites), Cynipids (or gall wasps, which live on various plants), Bees, Wasps (both of which include many solitary species as well as the more well-known social sorts) and the Ants. The sawflies and their allies form a sub-order of the Hymenoptera called the Symphyta. The Symphyta is an ancient and rather primitive group. Some of the most primitive Hymenoptera of all belong to the sawfly family Xyelidae. Many species of Xyelidae still exist in North America and Europe and they have changed little since they first appeared in the Triassic era, approximately 225 million years ago. *Xyela julii* is quite common in some parts of Britain, especially the Highlands. It is a small insect (about 7 mm long in the female) and about 3 mm of this length is taken up by the exceedingly thin, pin-like ovipositor (egg-placer). It flies in very early spring around pine and birch trees. Its larvae live in the staminate flowers of pines. The adults visit birch catkins to eat the pollen.

Woodwasps (family Siricidae) are also members of the Symphyta, and like all of these insects they cannot inflict a sting. Although woodwasps are probably the best known of the sub-order, their wood boring larval habit is not typical, and neither is the large size of the adults.

One or two other small families deserve passing mention, though they also have habits quite unlike the species in the Tenthredinidae (by far the largest and most widespread family in the Northern Hemisphere). The Cephidae contains species whose larvae bore in the stems of various plants. *Cephus pygmeus* (the Wheat-stem borer) has in the past caused immense damage to grain crops (wheat, barley and rye) in Europe, parts of Asia and North America. Its occurrence in large numbers has caused serious financial loss, and even starvation in some areas. The highly aberrant members of the family Orussidae (sometimes put into a sub-order by themselves) are the only known parasitic sawflies. Their hosts are timber beetles of the family Buprestidae. One species has been recorded as British by early entomologists, but its presence here is doubtful. Species in the Pamphiliidae approach the 'typical' sawfly in the habits of their larvae, which, like most others, feed externally on the green parts of various plants. They differ, however, in that some of them live enclosed in rolled-up leaves (the leaf rolls take different, characteristic forms for each species). Other Pamphiliids live communally or singly in silken webs or tubes on coniferous trees. The other small primitive families (Cimbicidae, Diprionidae and Argidae) contain mostly large insects with larval habits similar to the Tenthredinids.

Sawfly larvae mostly resemble those of butterflies and moths in general appearance. They are very abundant in most habitats throughout the summer and autumn. They constitute a very substantial part in the diet of insectivorous birds. The larvae have many other enemies, but

their principal losses are caused by Hymenopterous parasites, especially Ichneumons. Most sawflies overwinter as prepupae, resembling shortened versions of the full-grown larva. This stage is quite dormant and is passed inside a cocoon. Some sawflies take only a few weeks to develop into adults, and in these species there may be several generations in a year. The rest have only one brood per season, with the adults flying in the spring and early summer and the next generation of adults appearing in the following spring. The name 'sawfly' is derived from the shape of the female's ovipositor, which resembles a minute saw in some families. The saw is used to cut slits in plant tissues into which the eggs are placed.

Amongst the Tenthredinidae there are several species whose larvae 'mine' leaves and others which are gall makers. The leaf mining ones have flattened, colourless larvae with poorly developed legs. They consume the contents of leaves between the upper and lower epidermal layers. The relatively primitive nature of sawflies is reflected closely by their larval food plant associations: mostly primitive plants are eaten, for instance Horse-tails, Conifers, Willows and Ferns. Many of the species attacking conifers are serious forestry pests. Some species defoliate shelter trees occasionally with serious results (eg *Tomostethus nigratus* on shelter belts of Ash trees in the Steppes of Southern Russia). Certain *Athalia* species (the genus which includes the Turnip Sawfly) can do much harm to crops of Brassicas, particularly in Asia. *Caliroa cerasi* is the infamous pear and cherry 'slug' of these fruit trees in almost every part of the world where they are cultivated. Further species attack cultivated Strawberries, Raspberries, Currants, Potatoes, and in warmer climes, the Vine. Many others destroy ornamental garden plants. Pest species are much in a minority, though, and even in the British fauna nothing is known about the life histories of over half of our species (about 500 sawflies are known in the British Isles).

As in the Lepidoptera (Moths and Butterflies) some species' larvae eat a range of plants whilst others are exceedingly specialised, and feed only on one plant.

Distributional patterns for sawflies are complex and for the most part poorly known. Sawflies are somewhat unusual amongst insects in being richest and most diverse in the more temperate regions of the world: fewer numbers occur in the tropical areas, though some families have their only representatives there. The larger species of the more primitive families tend to be concentrated in the warmer temperate areas however. As one moves north through Eurasia and North America the small insects in the vast sub-family Nematinae, part of the Tenthredinidae, increase in numbers until one comes to the subarctic and arctic lands where they are the only sawflies and form a very substantial part of the animal community. Nematinae are considered to be the most advanced of sawflies. They are superficially all rather similar and often vary from specimen to specimen in the same species. In the Scottish Highlands one finds interesting pockets of Nematinae isolated on the mountain tops. These species are relics of the post-glacial tundra of the last ice-age. Their larvae often feed either on arctic-alpine dwarf willows or sedges. An example of this sort of sawfly is *Amauronematus abnormis* (Holmgren) which is only known in Britain from the summit of Braeriach, in the Cairngorms, at over 4000 feet. The female of *abnormis* has stunted wings, an adaptation which helps save it being blown away from its particular habitat. The larva probably feeds on Least Willow (*Salix herbacea*). Its world

distribution is in Novaya Zemlya, New Siberian Islands, Franz Josef Land, North Alaska, Lappland, North Behring Sound, Baffin Island, North-West Territory of Canada, High Swiss Alps and the Lena River of Central Siberia. Such circumpolar and alpine ranges are typical of these arctic species. Populations isolated on mountain tops often develop their own characteristic structural and colour patterns. This type of variation causes taxonomists much difficulty. It is interesting to note that sawflies can breed at least as far north as Ward Hunt Island off the north coast of Ellesmere Island (Lat. $83^{\circ}05'N$, and Long. $74^{\circ}30'W$). *Pachynematus parvilabris* was found in this locality which is less than 500 miles from the North Pole.

The majority of adult sawflies visit flowers, sometimes only to capture small insects as food or to find mates, but many eat pollen and drink nectar. For the most part their mouthparts are short and they have to visit flowers with easily accessible nectaries. Umbellifers are particularly attractive to them, not least because they are also attractive to small soft-bodied flies that are suitable as prey. Certain species visit only the flowers of their larval foodplant: these are probably useful pollinators.

Finally a mention must be made of the phenomenon called parthenogenesis which is found in many sawflies. This genetic peculiarity enables the female to produce viable offspring without fertilisation by a male. The process can continue indefinitely without a single male appearing and in many species the male is completely unknown. Parthenogenetic species benefit in that they are able to maintain themselves in very small fragments of suitable habitat. Also, a single female can colonise a new area. In this way several European sawflies have been introduced to North America (though only one has come from America to Europe). Some of these introduced species have become serious pests because their natural parasites and predators are not present outside their old range. The disadvantage of parthenogenesis lies in the inability of the species to adapt quickly to climatic and other changes.

A.D. Liston

SOME NOTES ON NATURAL HISTORY

Meeting of the Mammal Society - August 1979

Late in August, two members joined a meeting of the Mammal Society at Glenmore. During the week we watched Bottle-nosed Dolphins feeding at the turn of the tide at Chanary Point at Fortrose and counted at least 18 surfacing at once. Many leapt quite out of the sea chasing fish. One very small dolphin was escorted by its parents.

At Ardross bat boxes are set on trees in a coniferous wood. They are sited north, south, east and west at 8 m and 16 m up the trees on 60 trees. We helped to inspect each box. Fourteen Long-eared Bats were caught. This small number is due to the northern site.

On our expeditions we watched a Hen Harrier quartering the heather at Lochindorb and close by a herd of Wild Goats. Later we saw another herd of 25 near Slochd Summit. In the woods in Speyside we watched Crested Tits, a few feet from us Crossbills feeding on cones, Red Squirrels and Roe Deer.

C. Stewart

Goats

Over the past few years members have seen feral goats in many parts of the country. Some of these sightings are listed below.

- 1972 Kinveachy, Carrbridge. 12, very dark brown with beautiful white markings. (EF)
- 1973 Kinlochewe, near Loch Fada. About 10. (CS)
- 1973 Tignabruaich. 5, all dark brown with white bellies. (NH EF)
- 1974 Glen Trool. About 19. (CS)
- 1977 The Mound, Rogart. About 8. (CS)
- 1977 Grey Mare's Tail. (Society outing)
- 1979 Gaisty Law, near Tow Ford. 23, mixed colours. (see below)
- 1979 Lochindorb, near Carrbridge. 28, mixed colours. (CS EF)
- 1979 Slochd Summit on A9. 25, mixed colours. (CS EF)
- 1979 Murray's Monument, Kirkcudbright. 30, mixed colours. (BG)
- 1979 Oa, Islay. 7, 4 white, 3 grey. (see below)

Can anyone add to this list?

E. Farquharson

Reference

The Wild Goats of Great Britain and Ireland. G. Kenneth Whitehead. 1972

Wild goats on the Cheviots

While walking along Dere Street towards Gaisty Law on 12 July, five ENHS members saw a herd of 23 Wild Goats. Two dark brown goats were first spotted through binoculars, and then others of various colours - brown and white, grey, and grey and white.

Although two females had small kids, the goats showed no sign of fear as the walkers approached, but moved on for a short distance, and resumed grazing and resting.

M. Mowat

Islay

In mid-October we visited Islay. In brilliant weather we saw great flocks of Barnacle Geese at the head of Loch Gruinart, their black and white plumage standing out against the green fields. Later at Ardnave Loch we were able to approach to within 50 yards of Whooper Swans, who appeared quite unconcerned. We wondered if this was because they had just arrived and were tired. There were 64 swans but they had dispersed the next day.

We also spent a day on the cliffs on the Mull of Oa and watched Choughs flying on the wind currents and feeding on the grassy headlands. A Peregrine flew past at speed and in a small bay we disturbed a herd of Wild Goats, 4 white and 3 grey.

We had several sightings of Hen Harriers, small groups of Roe Deer, small flocks of White-fronted Geese, and great flocks of Golden Plover.

At dusk we watched hundreds and hundreds of Barnacle Geese coming in to roost against a stormy sky.

E. Fraser, S. Littlejohn, C. Stewart

Earth Star Fungus

Following the previous report regarding this fungus (see 1978 Journal, page 37) the site, near the River Tyne at East Linton, was visited on 23 9 79. Four fruiting bodies of the fungus were seen, in various stages of maturity.

The fungus was under Elm and the spores, when examined under a microscope, were seen to be round and warted. No basal cup was present. These characters suggest the species to be *Geastrum rufescens* (formerly *G. fimbriatum*)

Not far off the Giant puff-ball (*Langermannia gigantea*, formerly *Lycoperdon giganteum*) was in fruit.

R. Weatherhead

References

Collins Guide to Mushrooms and Toadstools. Lange & Hora.
Identification of the Larger Fungi. Watling, R.

On Ergots

On 9 September 1979, many sclerotia¹ of *Claviceps purpurea*, or ergot, were seen on the seed heads of various wild grasses at the Cardrona Plantation of Glentress Forest, near Peebles. Only a few days earlier some were found on Corstorphine Hill. The fruit bodies of ergot develop from the sclerotia in the spring, after these have fallen to the ground.

Ergot occasionally attacks cultivated rye. If rye bread made from infected grain is consumed it produces the condition called Ergotism, known in historical times as St. Anthony's Fire. Whole villages have been known to suffer from ergotism. The most recent case occurred in a small French village within the last decade or so.

Until at least the end of last century, ergot was used in minute amounts as a medicinal preparation, mainly for the control of bleeding. In any substantial quantity the fungus is highly poisonous. Various symptoms appear: at first there may be tingling and itching of the skin, numbness follows, and parts of the toes and fingers become gangrenous and die. In some cases there may be sickness, deafness, partial blindness, mental weakness or convulsions. Severe poisoning leads to sickness, purging, headache, dizziness, convulsions, coma and death.

A D. Liston

¹A sclerotium (plural -a) is the resting stage of the fungus. It takes the form of a black, banana-shaped mass, about half an inch long, of closely interwoven fungal threads or hyphae. It gradually replaces a grain.

Dark Green Fritillary - *Mesoacidalia aglaja*

On 17 July 1979, a humid grey day with intermittent soft light rain, a Dark Green Fritillary was seen on the Roman Camp, near Mayfield, Midlothian. It was resting, wings closed, on the yellow flowers of Common Cat's-ear (*Hypochoeris radicata*). The greenish colour of the hind underwings with their silver basal, discal and marginal spots, was noted. It was possible to see the pale orange brown of the upper wings with their black markings by delicately prising open the closed wings, so quiescent was our butterfly.

This species lives on flowering heaths and its larval food plant is the dog-violet. The Roman Camp (altitude 800 ft) as it is known, is just such a site and provides a many flowered enclave in an area of mining towns and intensively farmed land. Other locations where it may be found locally are the Lammermuir Deans, the Moorfoots and on the coast.

E. Hamilton

References

Collins Field Guide to the Butterflies of Britain and Europe.
Butterfly Distribution Atlas. Monkswood

OBSERVATIONS MADE BY MEMBERS DURING 1979

- 11.1.79 Herald Moth in the house (Bruntsfield) Hard frost outside.
E.F.
- 7.2.79 Six Common Seals in St. David's Bay Group was very active
and some were 'porpoising' repeatedly. E.F.
- 8.4.79 Near Tynehead station, there was a very large flock of
Bramblings, possibly 200 - 300 birds. The following day the
flock was smaller, but the birds in the beech trees were calling almost
continuously. E.D.L.
- 2.5.79 On the evening outing to Corstorphine Hill the lateness of
the season was very apparent - only Horse Chestnut and
Sycamore were showing signs of leaf, and the only flower we found was
one blossom of Wood Sorrel. Birds, too, were far from numerous, and it
was only on the last part of the outing that we finally heard a half-
hearted song from a 'summer visitor' and were able to spot two Willow-
Warblers. From Clermiston Towers members had a fine view as far as the
still snow-flaked Ben Ledi and Ben Lawers. M.W.
- 30.5.79 The inclement weather this year made the outing to Roslin
Glen a poor one for 'Introduction to Bird Song'. The only
songsters regularly performing on this cold, wet evening were Chaffinch
and Blackbird. We did, however, also hear Wren, Robin, Song Thrush,
Dunnock, Yellowhammer and Willow-Warbler, and we had excellent views of
a Tree Creeper. M.W.
- 2.6.79 Walking over the Ridhall Law plateau on the outing in the
Carfraemill area, Buzzards, unusual in the area, were seen,
also a Peregrine. Was it passing through? Ring Ouzels, in groups of
four to six young birds, were very active near Sunhope Burn. About 20 -
30 birds were seen in different glens H.M.

- June/ During the summer I had two brief views of Fox, probably the
 July same animal. On the first occasion I saw it watching me
 from a wood on the edge of Hillend Park and on the second occasion I
 watched it from another wood on the edge of the area. Distances
 between us were only about 100 yards at most and the time was 3 pm or
 so on both these lovely June and late July afternoons. J.H.W.Y.
12. 6.79 Brimstone Moth on doorstep (Bruntsfield). E.F.
14. 6.79 On Wester Craiglockhart Hill, Edinburgh, I saw Pignut
 (*Conopodium majus*) Heath Bedstraw (*Galium saxatile*),
 Crosswort (*Cruciata laevipes*), Common Rock-rose (*Helianthemum
 chamaecistus*), Biting Stonecrop (*Sedum acre*) and Purple Milk-vetch
 (*Astragalus danicus*). H.T.
 (Note: Pignut and Heath Bedstraw are 'lime-hating'; Common Rock-rose,
 Crosswort, Biting Stonecrop and Purple Milk-vetch are 'lime-loving'.
- 11/ On Dere Street, near Oxnam, Jedburgh, many small Chimney
 12. 7.79 Sweeper Moths feeding on Pignut, were seen. This moth is
 about one inch across with black wings, edged with a very thin white
 line round the tips and is only found locally. C.S.
18. 7.79 A pair of Fulmars in Torphin Quarry. S.G.
18. 7.79 During the evening excursion to Craiglockhart Hill a group
 of five Kestrels flew overhead calling to each other. The
 group seemed to be based on the vertical rock face behind the young
 trees which the Society planted in 1974. E.F.
2. 7.79 On the Elie Cliff walk the northern Brown (or Mountain)
 Argus Butterfly (*Arícia artaxeuxes*) was seen. The Rock-
 rose, the feeding plant of the larva, was plentiful in the area. C.P.
18. 7.79 On a cold windy day, I found a very beautiful moth in
 Crichton Glen. It was nearly the size of a small Tortoiseshell
 Butterfly and the colour a pale blue-green. The lower wings had a
 double pale line across them: the lower underlined with a dark line.
 The antennae were strong yellow and furry. By an extraordinary
 coincidence, two days later in a T.V. nature programme the picture of
 a moth just added to the protected list seemed nearer to the Crichton
 specimen than any I could find. It was the Essex Emerald but had only
 a single line across the wing. What was the moth I found? E.D.L.
20. 7.79 Dragonfly (*Cordulegaster boltoii*) observed on moorland
 close to the remains of the ancient village of Annait, O/S
 sheet 48 Grid Ref 637605. This observation was made while following
 the old right of way from Dalnaspidal Lodge via Loch Garry to Loch
 Rannoch. (See Collins Field Guide page 71). C.S.B.
2. 8.79 On a visit to the hides at Morton Lochs (Nature Conservancy
 Reserve) two members of the ENHS had six or seven separate
 views of a female Marsh Harrier across the water, quartering the marsh
 and reed beds. While waiting for the next appearance, we noticed what
 we thought was a duck preening at our side of the water, but when it
 came out from the reeds we realised it was a Roe Deer with only its
 ears and top of head showing as it swam across. It hauled out on the
 opposite bank, shook itself, and bounded into the rough ground, putting
 up the Marsh Harrier yet again. E.D.J. & M.M.
4. 8.79 In Craigie Wood, near Dalmeny, two juvenile Green Woodpeckers.
 C.P.R.
9. 8.79 One Red Squirrel near Guildtown, Perthshire (Tayside), on
 the road between Guildtown and Burrelton. C.P.R.

11. 8.79 Tawny Owl in Ratho Quarry. S.G.

5. 9.79 Well up Moorfoot Glen, walking purposely over the shoulder ridge, I watched three birds at first thought to be Grouse, as there were several flying and calling as I walked. Then I noticed the red legs, and assumed that the Rosebery Red-legged Partridges were on the move to Peeblesshire via Leithen Water. E.D.L.

6.10.79 On Yellow Craigs beach, 'Wild White Horses, Sea Potatoes and Crabs'. B.G.

EXCURSIONS - 1979

Key for excursions: A - Industrial archaeology, B - Botanical, Fu - Fungi, E - Entomology, Ff - Freshwater fauna, G - General, Ge - Geology, IBC - Island Bird Counts, Lh - Local history, Gr - Grasses, ML - Mosses/Liverworts, M - Mammals, Mol - Molluscs, O - Ornithology, S - Shore.

(a) easy walking, (b) hill walking, (c) difficult walking (¹1-5 miles, ²5-10 miles, ³10+ miles)

On Saturdays and at weekends

Leader

28 Apr	Leadhills to Wanlockhead (a) ¹	A/G	Hamilton Natural History Society
5 May	Crichton Glen (a) ¹	Mol	Dr. S. Smith
12 May	Abbotsford Woods and Faldonside (a) ¹	G	Mr. A. Smith
18 May	Arnside Weekend		
26 May	Tentsmuir (a) ¹	B/G	Mrs. J. Horobin
2 June	Lammermuir Circular Walk (b) ²	G	Mrs. H. Miller
9 Jun	Aberlady (a) ¹	G	Mr. C. Pountain
9 Jun	Lamb & Fidra (c) ¹	IBC/O	Mr. R.W.J. Smith
16 Jun	Peebles Circuit (b) ²	G	Mr. G. Bell
16 Jun	Craigleith (c) ¹	IBC/O	Mr. A. Dickson
23 Jun	River Tweed Walk (a) ¹	G	Mr. R.W.J. Smith
30 Jun	North Queensferry to St. David's (a) ¹	G	Mr. A. Buckham
7 Jul	Elie area (a) ¹	B	Mr. J. Carlyle
14 Jul	East Sands, St. Andrews (a) ¹	B	Dr. R. Begg
21 Jul	Seacliff (Moths/Barbecue) (a) ¹	Ge	Dr. C. Waterston
28 Jul	Bass Rock (a) ¹	E	Mr. G. Evans
4 Aug	Innerleithen (a) ¹	O	
11 Aug	Canal Walk (a) ¹	B/G	Mr. S. Clarke
18 Aug	Tillicoultry to Blackford (b) ²	G	Mrs. E. Hamilton
	or Mill Glen & Dollar Glen (a) ¹	G	Mrs. H. Miller
25 Aug	Scone Palace & Kinnoull Hill (a) ¹	G	Miss J. Raeburn
1 Sep	Carlops Walk (a) ¹	G	Mr. M. Jones
8 Sep	Tynninghame (a) ¹	G	Mr. D. Jones
14-17 Sep	Aboyne Weekend	S	
22 Sep	Cobbinshaw & Tailend Moss (a) ¹ with Scottish Wildlife Trust	G	Mr. J. Oliver
29 Sep	Harelaw & Threipmuir (a) ¹	Fu	Dr. P. Mason
6 Oct	Yellowcraigs (a) ¹	O	Mr. W. Clunie
13 Oct	Hopetoun (a) ¹	Fu	Mr. J. Carlyle

Evening excursionsLeader

2 May	Corstorphine Hill (a) ¹	G	Mrs. M. Watson
9 May	Hermitage (a) ¹	G	Mr. G. Carse
16 May	Penicuik Railway Line (a) ¹	Gr	Dr. P. Harper
23 May	Cramond Island (a) ¹	O/B	Mr. C. Rawcliffe
30 May	Roslin (a) ¹	O	Mrs. M. Watson
6 Jun	Union Canal (a) ¹	Ff	Mrs. E. Smith
			Mrs. A. Gillespie
13 Jun	Royal Botanic Garden (a) ¹	B	Dr. C.C. Wood
20 Jun	Cramond (a) ¹	ML	Mrs. Richardson
27 Jun	Water of Leith (a) ¹	Ff	Mrs. S. Da Prato
4 Jul	Dalkeith Palace Grounds (a) ¹	G	Mr. M. Robinson
11 Jul	Red Moss (a) ¹	B/G	Miss J. Raeburn
18 Jul	Craiglockhart Hill (a) ¹	G	Mrs. E. Farquharson
25 Jul	Torduff Reservoir (a) ¹	G	Mrs. S. Gray

REPORTS AND EXTRACTS FROM REPORTSOuting to Wanlockhead with Hamilton Natural History Society - 28 April 1979

On Saturday, 28 April, a party of members and friends travelled by coach to Wanlockhead, a village in north-west Dumfriesshire, just south of the village of Leadhills. Here we were met by the members of the Hamilton Natural History Society who were to be our leaders and companions for the day.

Wanlockhead is the highest village in Scotland, lying perched in the Lowther Hills 1320 feet above sea level (the highland village of Tomintoul stands at a height of only 1110 feet) and it owes its existence to the mineral deposits in these hills. Although it is an isolated community surrounded by rather lonely heather-covered moorland and hills we were soon to realise that we had come into a lively village, proud of its history and ready to share it enthusiastically with visitors.

In the morning we walked along the main village road to the church and cemetery positioned on top of a Long Barrow used in the Early Bronze Age (2000 BC - 1700 BC). The gravestones in the 'modern' graveyard were covered with the same surnames over and over again, the villagers being closely related by birth and marriage.

On our walk to and from the graveyard our leader gave a short outline of the mining history of the area and we were shown examples of minerals found locally, including lead-grey galena (lead sulphide) and green-hued malachite (copper carbonate). Lead ore or galena was probably mined in the area as early as Roman times by digging it out from the surface and this 'open cast' mining went on through the Middle Ages. The ore would have been washed clean of sediment in the local burn and then smelted to remove the lead from the sulphur. This would have been done by mixing it with charcoal and heating it strongly in a cauldron of stones on top of the mountains where there was always a good breeze. Lead was used by the Monks of Newbattle for making green-glazed pottery tiles for the monastery walkways. Smelted lead was exported to the Mediterranean from the Port of Leith.

Other metals, including gold and silver, were also in the area for the taking, silver ore (silver sulphide) along with lead ore and gold as grains found in alluvial deposits in the gravel of the burns.

The neighbourhood became known as God's Treasure House in Scotland. The largest piece of gold ever discovered here, weighing 4 - 5 oz, is now in the British Museum. Queen Elizabeth I and James VI of Scotland gave orders to seek gold in the district to the Master of the Mint who is reputed to have employed 300 men and to have dug gold valued at £100,000 sterling.

James VI gave a charter to strike lead and the first lead mines were opened in 1680 with adjacent smelt mills not far from the cottages. It is not surprising that there are records of miners suffering from symptoms of lead poisoning. The ore is in veins in the ground and tunnels were driven along the line of each vein. Hand pumps were used to drain water from the workings. In 1716, with the increased use of lead in the making of pottery and glass, and as a building material, leases were taken over by a group of speculators who invested capital in exploration and mining machinery.

Throughout the years following the leases changed hands several times and many able engineers including William Symington, who built the first steam pump engine for the mines, were employed to improve the workings and bring about mechanisation. (William Symington, with a colleague, is thought to have been the originator of steam navigation.) Then in the 1830's, with the importing of cheap lead the Wanlockhead lead industry fell on bad days. When the leases expired the Duke of Buccleugh, the proprietor, took over the mining operations to maintain employment in the community. The mines were re-leased in 1906 but they had to be closed down during the depression years of the 1930's when the low price of lead mined and the high cost of pumping out the water from the workings made it impossible to carry on. They re-opened in 1950 but only for a short time.

In the afternoon we spent an interesting time in the museum and then following the Wanlockhead Silver-Lead Mines Walkway seeing what remains of the mine workings which we had been told about earlier in the day.

Perhaps our most interesting visit was to the library, which contains over 3000 books written from the 17th century onwards - it contains a first edition of Gulliver's Travels - on a wide range of interests including history, religion, geology, imaginative literature, novels, plays and poetry. It houses the original Minute Books and Records of the Reading Society, founded by the Lead Miners in 1756 for 'our mutual improvement'. The Society was an integral part of the community which always had a high level of literacy and cultural interests.

We finished our day with a very enjoyable tea in the hall arranged for us by members of the Wanlockhead Trust. We were most grateful to them for their friendly welcome. Before joining our coach we thanked our friends in the Hamilton Natural History Society for the good day and hoped that there would be another joint outing next year.

J. Raeburn

References

Wanlockhead Museum Trust - Victorian Scotland - Wanlockhead: Mines in the Leadhills.
Wanlockhead Museum Trust - All about Wanlockhead.

Weekend in Westmorland - 19 - 21 May 1979

Arnside - south of the Lake District on the Estuary of Grange-over-Sands - was the venue chosen by the Society for the 1979 May weekend.

Members travelled to the district by private car and met together at the RSPB Centre at Leighton Moss Silverdale, Lancashire. This reserve occupies 400 acres of attractive wooded valley flanked by limestone hills. Water from the surrounding hills drains into the valley through small springs around which grow reed beds which are the reserve's special feature. Now only about one-third of the Moss is open water. This was purchased for the RSPB in 1974.

Mr. Barnes was our guide and conducted two parties round the hides. Bird song was much in evidence and with the sun shining it was a pleasant expedition. While we walked the booming of the Bittern kept us all agog for a sight of this secretive bird. At one of the hides about four of our members were fortunate enough to get a glimpse of one. A Marsh Harrier was also observed.

We then motored on to our luncheon spot which was near the limestone roof of Gait Barrows. Before we started our walk, Mr. Stringer, a local geologist gave us a description of the limestone roof or pavement which was a most fascinating place. He said there had probably been a tropical sea in these parts thousands of years ago. This roof was a large limestone area with a series of clints¹ and grikes running each way. These were formed by the movement of water; this movement of water still goes on underneath resulting in plants, shrubs, ferns etc growing in the various apertures. Mrs. Baecker, Mrs. Dalton and Mr. Stringer were lively guides who were happy to show us all the plants etc which grew in abundance. The group's feeling as they spread out over the roof was one of visiting some ancient ruin.

After our visit to the roof we walked to Howes Water, a fresh-water lake with a stream coming in. Near here we found the early Purple Orchid (*Orchis mascula*) and Bird's-eye Primrose (*Primula farinosa*).

Sunday morning our outing was mainly local and we walked all day. Mrs. Baecker, Mrs. Dalton and some local naturalists joined us. We walked by a meadow to the Knott, a hill with a viewpoint (900 ft), which overlooks Arnside. Many and varied flowering plants including sedges were growing here. Again our guides knew every nook and cranny on the hill where they had something to show us - they did again, with such a happy approach that we became infected by it all.

We moved to Silverdale on the coast where we had our picnic lunch. This gave the 'bird' people a chance to put up their glasses and look around - instead of rare birds we witnessed the strange sight of a long thin line of people (approximately 200) walking over the estuary and making for the other side - it was rather eerie to look at from a distance and distinctly biblical. We learned that this walk takes place annually with an experienced guide.

¹Clints are blocks of limestone separated by enlarged joints known as grikes. Clints and grikes form limestone pavement.

We continued along the coast and met Mr. Mashetter at Grubbin's Wood. This wood is privately owned and Mr. Mashetter looks after it. He showed us many trees and shrubs, some of which he had introduced notably the Service Tree (*Sorbus torminalis*). This is about the furthest north that this particular tree is to be found. In the wood we found Wild Privet (*Ligustrum vulgare*), Green Hellebore (*Hellaborus viridis*), Stinking Hellebore (*Hellaborus foetidus*), Common Solomon's Seal (*Polygonatum multiflorum*) and many other flowers. The wood was full of interest and kept Mr. Mashetter busy. He said during the severe winter the wood was warm and sheltered with no hint of the extreme conditions elsewhere.

Our last day was spent at Grasmere. Most of our party stayed at the hostel of High Close which comprised about 500 acres of land purchased by the National Trust. High Close is beautifully situated with wonderful views of the Langdale Pikes. The walk arranged was by Elter Water to Skelwith Bridge, past Skelwith Force which is an impressive cascade of fast flowing water. The remains of the old mill-race that once supplied the slate mill are still visible. The slate mill still exists and locally quarried green slate is processed here before being exported all over the world. After lunch we walked round Loughrigg Tarn back to High Close. During this walk we observed various spring flowers, heard Great Spotted Woodpeckers and Green Woodpeckers. We watched Pied Flycatchers, Spotted Flycatchers and Redstarts who put on a special display for us.

It was a very good weekend and the weather was kind to us. Our thanks to Mrs. H. Miller and her team for their work and organisation.

N. Fisher

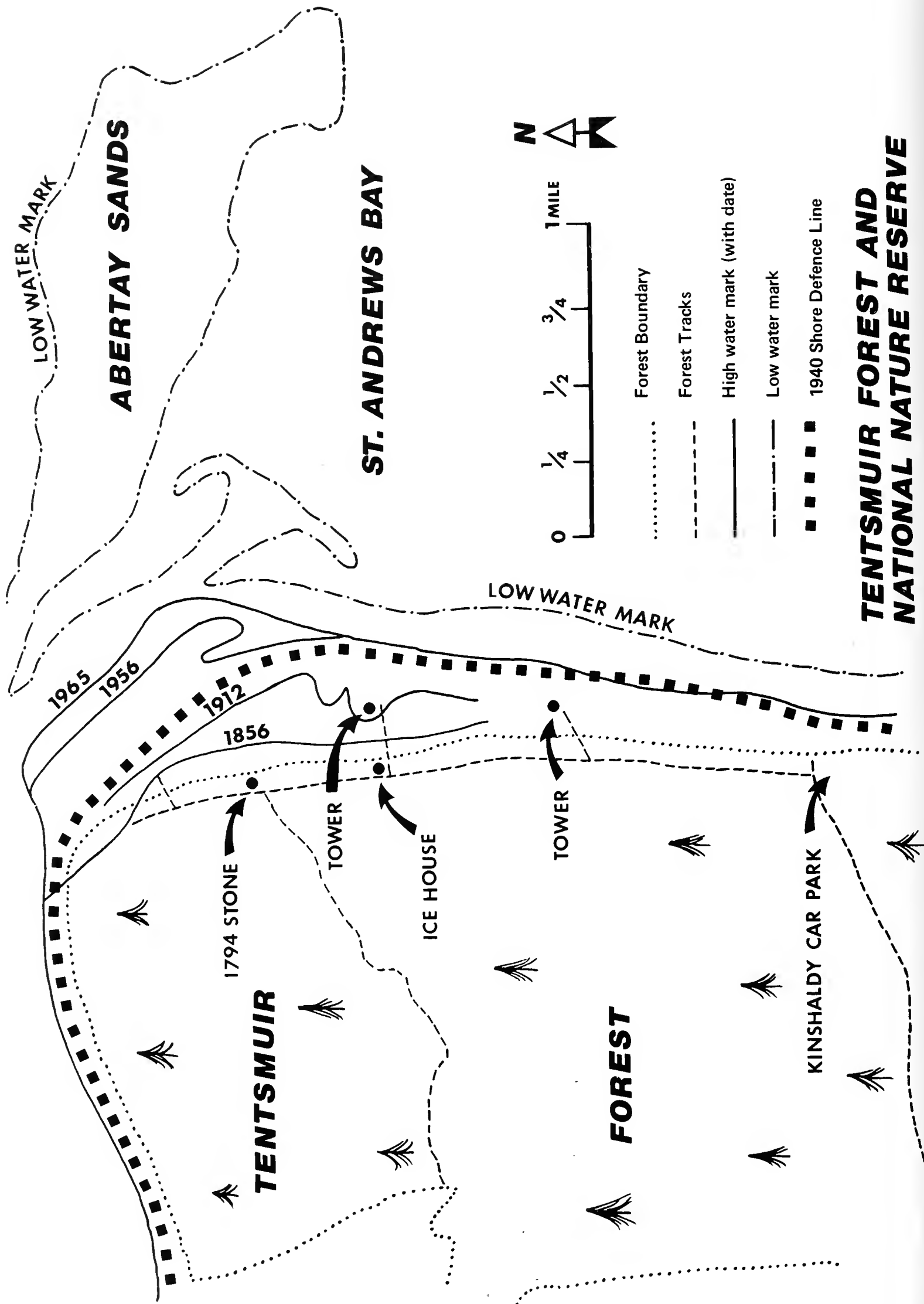
Outing to Tentsmuir - 26 May 1979 (Leader, Mrs. J. Horobin)

Tentsmuir Wood and Nature Reserve were visited on Saturday, 26 May when the Society had the good fortune to be led by Mrs. Jean Horobin. The warden, Mr. Peter Kinnear, also accompanied us during the morning.

We first visited the landmark known as the 1794 Stone. This stone marked the salmon fishing boundary between two estates, while nearby stands an icehouse, no doubt erected for the storage of salmon. The supply of ice would probably come from Dundee which was manufacturing it by that date. Both the boundary stone and the icehouse stand on old sand dune ridges now planted with Scots Pine. Elsewhere in the wood Corsican and Lodgepole Pine have been planted.

From the boundary stone we moved towards the shore. Shepherd's Cress was growing under the 50-year-old trees at the side of the track and showing a preference for ground that had been disturbed.

On the ground nearest the plantations and furthest from the sea, a scrub vegetation of Alder and Willow has developed along with a heath ground cover. In some places selfsown Scots Pine are well-established. One old dune slack which runs the greater part of the reserve is heavily colonised with Alder. This dates from a year during which there was prolonged flooding and a plentiful crop of Alder seed. As Alder seeds float they were distributed widely throughout the flooded area.



**TENTSMUIR FOREST AND
NATIONAL NATURE RESERVE**

Also seen in these damper parts were Woodrush and Sand Sedge. Mrs. Horobin drew our attention to the points of difference between the Woodrushes and Sedges, the former having hairy leaf edges and the latter showing a tendency to grow in lines.

Five years ago when the rabbit population was very high there were fears that as the reserve became denuded of vegetation some of the rarer species might be lost. The rabbits were reduced by gassing and sample areas were fenced against the few remaining rabbits. For no obvious reason the rabbit population has continued to fall while in other parts of north-east Fife numbers have reached plague proportions. Within the fenced areas the vegetation is now taller but there is little evidence of greater diversity. Meanwhile the endangered species are now recovering.

The 1794 stone is of historical interest but the concrete anti-tank barrier of 1940 is of equal interest when studying the dune formation and colonisation of this part of the coast. Both landmarks have a known date, and both were close to the high water mark at the time of construction so the rate of land advance over the past 185 years can be calculated. The anti-tank barrier now stands some 500 yards back from the coast and in places is buried in dunes.

As we walked over successive dune ridges and slacks we passed through woodland and heath vegetation which gradually gave way to a maritime flora. *Juncus balticus*, Grass of Parnassus and Mouse-ear Hawkweed were seen. Annuals have been sparse since the February gales, seeds being too deeply buried under fresh layers of sand.

The role of Marram grass in the stabilisation of dunes was well illustrated in part of the reserve where there has been erosion. The root system could be seen like a network through the dune mass, capable of sending out new growth when through erosion it became exposed. The dunes closest to the sea have been colonised by Lyme Grass, Tentsmuir having one of the finest stretches one is likely to see.

Tentsmuir can boast the highest number of Grayling butterflies in Scotland with ten times the national average. It is a butterfly of sand dunes and feeds on Marram Grass.

On this visit no red squirrels were seen. On the damp sand footprints of Hare and Roe Deer were conspicuous. During the lunch break Grey and Common Seals were seen off shore and Dunlin, Knott and Ringed Plover were along the water's edge.

We are most grateful to Mrs. Horobin for showing us round such an interesting reserve and for her lucid interpretation of all the changes that are taking place.

E. Farquharson

Outing to Aberlady - 9 June 1979 (Leader, Mr. Charles Pountain)

This was a varied and very pleasant outing with the interest almost equally divided between the botanical and ornithological. Before leaving the Gullane car park a Sedge Warbler was both heard, and seen, and in the first half hour from the path leading to Aberlady Bay White-throat, Willow Warbler and Redpoll were observed before all eyes were

riveted on a Garden Warbler singing in full view from the top of a sycamore tree a hundred yards or so inland.

Yellow Figwort (*Scrophularia vernalis*), a plant introduced into Britain and now found in plantations and waste places, grew near clumps of Teasel in leaf and Bur Chervil (*Anthriscus caucalis*) in flower. Further along on the short turf were Purple Milk-vetch (*Astragalus danicus*), Bird's-foot Trefoil (*Lotus corniculatus*), and in the dune slacks Barren Strawberry (*Potentilla sterilis*) in some profusion and the first colour showing of Hound's-tongue (*Cynoglossum officinale*). Orchids in the wet central part were only beginning to flower, but the brick-red florets of Early Marsh Orchid (*Dactylorhiza incarnata*) were seen, and in the ditch to the north of the Marl Loch the Bogbean (*Menyanthes trifoliata*) was at its best.

The warden gave us the good news that Tern numbers, after a slow start, had built up to 260 Common and Arctic Terns, 17 Little Terns, and at least one pair of Roseate. In the Tern no-go area was a very small wader thought to be a Temminck's Stint. An Eider Duck was seen sitting tightly on her eggs while others had small ducklings down at the sea, one group of six and a composite family of about 25.

It was a most rewarding outing whatever one's main interest.

E.D. Landells

Outing to the Royal Botanic Garden - 13 June 1979 (Leader, Mr. R.J.D. McBeath)

Mr. McBeath first outlined the 300-year history of the Royal Botanic Garden, from its beginnings as a Herbal garden for medicinal studies to its present state in which it serves as a pleasure-garden for Edinburgh, a training-ground for 45 students taking horticultural degrees, and most importantly, a scientific centre for the accurate identification and naming of plants from all over the world.

We were shown the alpine scree, the rock garden, the peat wall beds, the heather garden, the limestone walls, the new dwarf Rhododendron beds, and in each case it was explained how they were constructed to simulate the natural requirements of their inhabitants. Similarly, when we reached the hot-houses, Mr. McBeath showed how natural-looking stumps and branches had been man-made to provide the correct conditions for orchids and various epiphytes, and how the temperature and humidity were automatically controlled.

In addition to all this 'background' information, our leader in the course of the walk identified and explained the characteristics of innumerable plants: from the Spanish Heather whose roots are used to make 'briar' pipes to tiny Sundews in the newest of the glass-houses, and the evening ended long before our interest had been exhausted.

M. Watson

Outing to North Queensferry - 30 June 1979 (Leader, Mr. J. Carlyle)

Below are some of the 'not too common' flowers seen on this outing:

Bird's-foot (*Ornithopus perpusillus*) - only a few plants to be seen.

Danewort or Dwarf Elder (*Sambucus ebulus*) - a foetid herb.

Fyfield or Earth-nut Pea (*Lathyrus tuberosus*) - rare in Scotland, two plants found at Inverkeithing - roots bear small tubers.

Sand Leek (*Allium scorodoprasum*) - recorded at St. David's in 1834.

Scarlet Pimpernel (*Anagallis arvensis*) - After much searching two straggly plants were found; never common around this area, now even less so.

Soapwort (*Saponaria officinalis*) - the plant covers an extensive area on the railway bank opposite the Old Toll, Inverkeithing. It was not in flower in June but when it is, it makes a delightful scene with single and double pink or flesh-coloured petals. I wonder if it were used as a soap? (see note below)

Warty Cabbage (*Bunias orientalis*) - best seen near Inverkeithing Station.

Wild Liquorice or Milk-vetch (*Astragalus glycyphyllos*) - it has extended its area over the last few years, at foot of Basalt Cliffs.

(With the building of the Road Bridge, Purple Milk-vetch (*Astragalus danicus*) appears to have been lost, just as the site of Purple Oxytropis (*Oxytropis halleri* - formerly *O. uralensis*) was destroyed when the Railway Bridge was built. There are several specimens of *O. uralensis* in the herbarium at the Royal Botanic Garden picked between 1794 and 1860. The plant was abundant at these times.)

Wild Parsnip (*Pastinaca sativa*) - only one plant seen.

Wood Vetch (*Vicia sylvatica*) - perhaps a first recording for Inverkeithing.

We had hoped to see Red Broomrape (*Orobanche alba*, formerly *O. rubra*) parasitic on Thyme in St. David's Bay. We failed to do so.

J. Carlyle

Note: according to Hyde, M. in 'Hedgerow Plants', when bruised or boiled in water the leaves and roots of Soapwort produce a fine lather which was much used in the past for washing woollen material. The plant was formerly grown near woollen mills.

Outing to Earlsferry - 7 July 1979 (Leader, Dr. R. Begg)

Members of the Society were fortunate in having a fine sunny day for this visit which began with a walk round Earlsferry Bay continuing to Kinraig Point, Shell Bay and back via Grangehill. The dunes and cliffs here are notable for a rich flora including Lovage (*Ligusticum scoticum*), Slender or Seaside Thistle (*Carduus tenuiflorus*), Purple Milk-vetch (*Astragalus danicus*), Sea Campion (*Silene maritima*), Sea-milkwort (*Glaux maritima*), Sand Sedge (*Carex arenaria*), Lesser Meadow-rue (*Thalictrum minus*) and Viper's-bugloss (*Echium vulgare*). On the cliffs were, *inter alia*, the Burnet Rose (*Rosa pimpinellifolia*), Bloody Cranesbill (*Geranium sanguineum*) and Common Rock-rose (*Helianthemum chamaecistus*). On this plant we were lucky enough to see the rare Mountain Argus (*Aricia artaxerxes*) butterfly with a white spot on each forewing, the rock-rose being its only source of food.

Geologically, Kincaig forms part of the volcanic complex better known on the south shore of the Forth at Arthur's Seat and elsewhere, and one member was able to show us a vent and describe the formation and weathering of the basalt.

Out to sea in excellent visibility were a number of birds including Gannet, Fulmar and Eider.

R. Begg

Outing to East Sands / St. Andrews - 14 July 1979 (Leader, Dr. Charles Waterston)

The walk started at St. Andrews East Sands where we saw three levels of raised beach - the 100 feet level, 75 feet level and 25 feet level - formed by rising land and sea. Further along we saw corrugated rocks showing a series of arches formed by folding of the bedded sandstone rocks

Coming to the Rock and Spindle Beach, several volcanic vents were pointed out to us. The gas coming from these vents had shattered the rocks and strewn them around and the contrast between the area covered by these boulders and the bedded sandstone could clearly be seen. We were standing on the shattered rocks which originally were, before erosion had taken place at a very deep level of the craters. We saw coarse and firm ash which had fallen back into the eroding craters and become bedded. In the isolated stack rocks (remains of the vents) we could see the junction of bedded ash and bedded sandstone. The Rock itself was formed by bedded ash and the Spindle was an unusual, almost horizontal vent in which molten rock had been thrown up and become cooled showing a radiating structure of cooled rock.

Next we came to an area where boulders of sandstone had been broken up and were lying between bands of bedded sandstone. This was caused by an explosive fissure outside the vent area. Root systems of old plants were present in the sandstone. The Craig Duff Dome and Kincaill Dome - caused by the rocks dipping in all directions due to folding - were pointed out.

G.M. Wood

Barbecue on beach followed by moth trapping in wood - 21 July 1979

Last year's meeting at Seacliff was repeated on the 21 July, with the moth-trapping in the mixed wood following the barbecue.

This year George Evans identified the following species: Barred Straw, Beautiful Golden Y, Common Wainscot, Double Square Spot, Green Carpet, Light Emerald, Mottled Beauty, Purple Clay, Small Fanfoot, Small Rivulet, Snout and the 'micro' *Pyrausta olivalis*.

The new species this year were:

Beautiful Golden Y whose wings are more mottled than the Plain Golden Y caught last year. In the specimen caught the gold Y mark, on the wing, was not complete but there was a gold V with a gold dot below. At the end when the moths were released, this moth came to rest on the sheet giving a chance to admire the markings and the tufts of hair on the top of the thorax and abdomen.

Common Wainscot is a stout straw-coloured moth whose caterpillars feed on grasses.

Purple Clay has a thick body and general colouring is a warm reddish-brown.

Small Rivulet is of interest as its caterpillars feed on the seeds of Hedge Woundwort.

Snout was recognised by its delta wings at rest and pointed head; it can be expected wherever nettles grow.

R. Weatherhead

Reference

The Moths of the British Isles - South Larval Foodplants. Allan.

Outing to the Bass Rock - 28 July 1979

We had an enjoyable afternoon on the island, being fortunate with the weather which, apart from a shower, remained dry and warm until half an hour before we were taken off in the boat, when it became very wet.

The Gannets are a remarkable sight, particularly when seen from a 'bird's eye view'. On the flatter parts on top of the cliff, where they are gradually extending their territory, they had the appearance of white 'cobbles' on a road, being packed so close together.

We also had a bird's eye view of three Seals (not identified but both Common and Grey occur) playing below the cliffs and diving. Guillemots were seen flying below the surface. Also seen on the Rock were: Gannets with chicks, Shags, Great Black-backed Gulls, Lesser-black backed Gulls, Herring Gulls, Kittiwakes with chicks, Guillemot with chicks, Razorbills, Puffins.

It was observed that the Tree-mallow (*Lavatera arborea*) - or Bass Mallow - had been severely cut back, presumably by the hard winter and it was much less tall than in previous years.

S. Gray

Aboyne Weekend - 14 - 17 September 1979

Saturday, 15 September

On Saturday, members who had travelled to Aboyne the previous day met at the Burn o' Vat car park on the main A67 road which runs through the Muir of Dinnet National Nature Reserve. There we were introduced to Mr. Peter Marren of the Nature Conservancy Council who was to be our leader for the day.

Mr. Marren first gave us an outline of the history and land forms of the area which, following an agreement with the landowners, was declared a National Nature Reserve in September 1977. Near the car park is a plaque commemorating its opening by the Duke of Edinburgh.

The Reserve covers 3805 acres (1408 hectares) and is approximately rectangular in shape, stretching three miles east from a triangulation

point on the granite Culbean Hill and one-and-three-quarter miles north from the Deeside Road (A93). Its great attraction for geologists and naturalists is that within a small area it shows many examples of glaciated land forms lying over older rocks and contains many different habitats for wildlife. These include heathland - the best Heather/Bearberry moor in Britain - regenerating woodland, bogs, reed beds and open water.

Our morning outing began by a walk westward from the A67 through some scrub and woodland and then up the side of the Vat Burn (the burn rises in the Culbean Hill) in its melt water channel - a melt water channel is one which has been carved out by torrents of melting ice flowing under the ice. The steep sides of the channel, which in this area forms a circular hollow shaped like an armchair, are formed of gravelly material deposited when the ice melted. Much of the ground is covered with Heather and Bearberry. Here and there are plants of Mountain Fern (*Dryopteris limbosperma*, formerly *Thelypteris limbosperma*) and Hard Fern (*Blechnum spicant*), two ferns typical of heaths and mountain pastures. In the wet flushes on the side of the burn are patches of Bog Asphodel (*Narthecium ossifragum*). On the rocky screes are copses of Aspen and occasional bushes of Holly and Juniper, plants which have escaped grazing and burning.

We followed the channel as far as the pothole known as the Vat. A pothole is produced in the bed of a river by the swirling action of pebbles in eddies trapped in a hollow, and the Vat is an impressive example of such a hole formed, in this case below the ice sheet. We approached it along a narrow rocky passage and then entered it through a narrow chink between two granite slabs. Its shape is that of a cauldron bulging out at the base, its walls are of overhanging granite rocks arching upwards to a height of about 50 feet (15 m), its wet gravelly floor - the gravel having been brought there by the burn which at one time must have cascaded down the rocks above - is almost an exact circle 60 feet (18 m) in diameter. Looking upwards the sky is seen through an opening smaller than the floor area. Some flowering plants, eg Lady's Smock (*Cardamine pratensis*), Wavy Bitter-cress (*Cardamine flexuosa*) grow on the damp floor and in the crevices in the granite Beech Fern (*Phegopteris connectilis*, formerly *Thelypteris phegopteris*), Brittle Bladder Fern (*Cystopteris fragilis*) and Scaly Male Fern (*Dryopteris pseudomas*, formerly *Dryopteris borrieri*). A few small trees including an Oak grow precariously high up the walls with their roots in rock crevices. Some members climbed up the side, not quite perpendicular, of the now tiny burn to view the melt water channel above the Vat and to see a plant of Serrated Wintergreen (*Orthilia secunda*) which grows locally on the Reserve.

After retracing our steps out of the Vat through the chink we climbed up the steep sides of the channel to reach a point where we could get a bird's-eye view of most of the Reserve east of the A67. With the Culbean Hill behind us we looked east towards a saucer-shaped plain covered with glacial drift forming humps and hollows. It is dominated by two lochs, Lock Kinnord into which the Vat burn flows and Loch Davan. We were told that these are kettle-hole lochs - a kettle-hole loch is one which has formed in a hollow by the melting on the spot of a large block of ice, detached from the main ice sheet and surrounded by glacial drift. The smaller damp hollows, known as kettles, between the hummocks had formed in a similar way but by the melting of smaller blocks of ice. Beyond the 'hummock and hollow' terrain we could see arable, grazing and forestry zones.

The vegetation before us formed a mosaic of woodland, moorland and bog. It was at this point that Mr. Warren spoke to us about the philosophy behind the management of such a Nature Reserve, saying that nature conservation is the art of compromise. On the Muir of Dinnet there is a primary conservation zone where priority is given to the animals and plants, an agricultural land area where the needs of the farmer are put first, and a forestry area where any tree planting has to be with natural Caledon Pine, seeds being taken from the local Pine trees, and where felling may only be carried out in small areas at a time. The Reserve is open but the public is encouraged in some areas and restricted from others. We then descended to the car park for our picnic lunch.

In the afternoon we were to look more closely at some of the habitats on the 'hummock and hollow' terrain which we had viewed from the heights. We walked over part of the Heather/Bearberry heathland. Growing amongst the two main plants there is much Bell Heather (*Erica cinerea*) and Intermediate Wintergreen (*Pyrola media*) with its glossy, almost circular leaves - the flowers were over - and some Petty Whin (*Genista anglica*). Next we crossed an area of scrub birch and pine woodland where since 1960 no burning had taken place and so regeneration had not been hindered. Members were particularly interested in lichens growing on the bark of birch trees. Birch has acid bark and most epiphytic lichens avoid this but in the absence of sulphur dioxide in the atmosphere acid sensitive lichens, eg the bushy (fructose) lichens *Usnea*, *Alectoria* (Mandarin's Beard) are able to flourish along with the northern species *Pseudovernia furfuracea* which prefers acid surroundings. Over one of the hollows full of water plants, within the wood, was flying the Dragonfly, Common Aeshna (*Aeshnidae juncea*). We were told that the woodland was an excellent habitat for Lepidoptera, including the Kentish Glory Moth whose larva feeds on birch. The birch provides food for at least 57 species.

Leaving the woodland we walked over grassland to the shore of Loch Kinord to see the reed beds. Unfortunately we had no sightings of birds but we were told that Wigeon, Mallard, Teal and Mute Swan breed there regularly and the winter passage flocks of geese, duck and Whooper Swans begin to arrive in October. Three families of Otters have been seen feeding in the Loch.

From the loch we returned to the woodland and followed a path leading into open land where we saw a field system, hut circles and stock pens of two of the main early settlements within the Reserve. Up to date very little excavation has gone on, although a few Iron Age finds have been made. It is thought that the settlements are of Iron Age in use 2000 years ago, although virtually they could have been in occupation any time between the late Bronze Age and Mediaeval times.

We made our way back to the A67 along the top of an esker - an esker is a long winding ridge of sand and gravel with steep sides and flattish top reminiscent of a railway embankment, deposited from melt water beneath a glacier. There are several on the Reserve, the one we were on having diverged from the melt water channel of the Vat Burn. From it we got a very good view of some of the small kettle hollows.

On reaching the car park enthusiastic thanks were given to Mr. Marren for giving us such an interesting day. Members will realise that much of what we saw and were told has been missed out from this short report. For further information, readers are referred to the

Nature Conservancy booklet written by Mr. Marren, details of which are given below.

J. Raeburn

Reference

Muir of Dinnet - Portrait of a National Nature Reserve. Peter Marren, Nature Conservancy Council.

Sunday, 16 September

At midday members assembled at the Visitor's Centre two miles up the wooded valley of Glen Tanar, some having walked to it along the Firmont Drove Road over Belrorie Hill from the banks of the River Dee. There we were to meet the Ranger on Glentamar Estate, Mr. Duncan Ross, who spoke to us about the estate to be designated as a National Nature Reserve two weeks later.

The estate covers 29,250 acres (11,700 hectares) of farms, forests and moorlands (40 per cent of the land is under agriculture, 25 per cent under forestry and the remaining 35 per cent is upland area) and the aim of its overall management is to produce a livelihood for the people who live and work on it. It has been possible, however, to combine this with a planned programme of conservation in the area and the provision of facilities for education and recreation (eg pony trekking, riding, grouse shooting, deer stalking).

Of great interest to the naturalist is the natural zone, conserved as a 'living' forest. This includes some Scots Pine trees which are direct descendants of the Pine trees of the Caledon Forest, dying trees, dead trees, trees which have regenerated naturally, and some trees actually planted as saplings grown from seed taken from native trees.

Some of the Pine trees in this natural zone are very old (180 - 300 years old) - these were spared the axe in the second World War - and will die naturally in the next 25 - 30 years. There are very few trees of intermediate age, for regeneration was prevented until 1930, when Red Deer grazing etc became controlled allowing Pine to come in naturally. With the help of the Nature Conservancy and the Forestry Commission the estate is trying to promote further regeneration by felling some of the older trees in groups and cultivating the spaces.

In addition to the natural woodlands there are man-made woods which have been planted with mixed conifers to produce a commercial crop of timber. The Firmont Road which leaves the car park passes through one of these.

Many interesting walks of varying length have been laid out starting from the Centre. Following the Forest Trail, about two miles in length, enables the walker to see man-made woods with a variety of conifers and some deciduous trees, part of the natural forest with Pine of varying ages and in the distance some remnants of unmanaged Caledon Forest. In the autumn the leaves of some of the deciduous trees, especially Maple, give pleasing patches of colour against the foliage of the rather sombre conifers.

J. Raeburn

Monday, 17 September

On Monday some members visited the National Nature Reserve Oakwood at Dinnet while others walked up the Fungle Road until lunch-time, amongst conifers and with fine views back towards Aboyne. As on the day before, we passed quotations and sayings carved in stone which the first Lord Glentanar had scattered with such enthusiasm over his estate.

The Fungle, like the Fir Mounth which passes through Glen Tamar, is an ancient route from Deeside through the hills to Angus and was used in times past by cattle drovers and is shown on Roy's map of the mid-1700's.

On the homeward journey most cars came by yet another ancient route which has now become the magnificent scenic road by Cairn o' Mount.

E. Farquharson

OVERHEAD.

at Aboyne while walking through an old graveyard,

"I think someone was buried here!"

FROM THE LIBRARIAN

There are now over 100 books in the Library covering a wide range of interests. A few of these have been kindly donated by members, but the Society has also purchased some recently, including a number of Observer Books and Field Guides, especially for use on excursions.

The books are on display at each indoor meeting and may be borrowed, for a small fee, by members. Unfortunately only a few books are taken out each month, and it would be encouraging to see more use being made of the library.

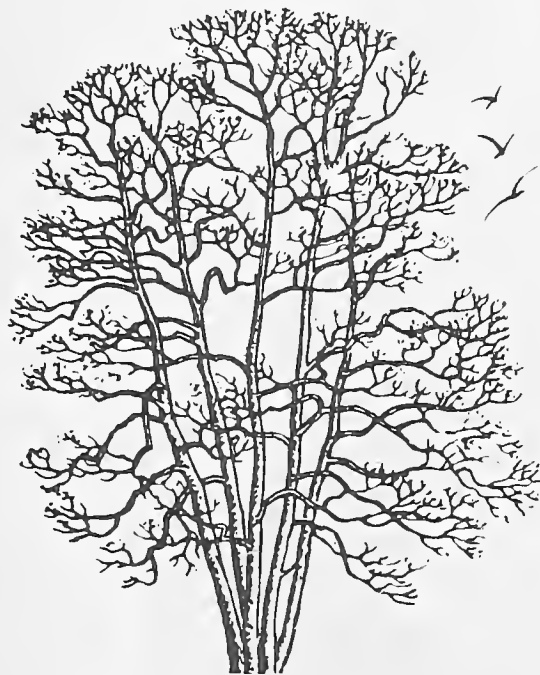
It is hoped that a selection of books will be available on some excursions to supplement members' own reference books. A full list of the books in the library plus various reports and Ordnance Survey Maps held by the Society, may be had from me. I would be very glad to hear of suggestions for additional books.

F. Howie

Recent additions to the library

Brown, L.	Birds of Prey
Edlin, H.	The Tree Key
Kerney, M.P. and Cameron, R.A.D.	Field Guide to the Land Snails of Britain (presented by Dr. Sheila Smith)
Nethersole-Thompson, D.	Highland Birds (presented by Miss Mary Herdman)
Nicholson, B.E. and Clapham, A.R.	Oxford Book of Trees
Soothill, E. and Fairhurst, A.	New Field Guide to Fungi
Tuck, G.	Field Guide to Seabirds

**THE
EDINBURGH
NATURAL HISTORY SOCIETY**



JOURNAL

-1980-

EDINBURGH NATURAL HISTORY SOCIETY

1980

PRESIDENT	Miss J. Raeburn
VICE-PRESIDENTS	Mr. G. Bell Mr. D. Jones
HONORARY SECRETARY	Mrs. C. Stewart 41 Craigleith Hill Avenue, Edinburgh EH4 2JL Tel: 031-332 7524
HONORARY TREASURER	Mr. A. Dickson 31 Alva Place, Edinburgh EH7 5AY Tel: 031-661-1216
MINUTES SECRETARY	Mrs. S. Litteljohn
COUNCIL MEMBERS	(Mrs. N. Fisher replaces Mr. G. Bell as a Council Member until 1981)
	Mr. M. Robinson appointed 1978
	Mr. K.W. Sanderson 1978
	Mrs. E. Farquharson 1979
	Mr. W.D. Gill 1979
	Mr. G. Reynolds 1979
	Dr. R. Begg 1980
	Mr. S. Clarke 1980
	Mrs. A. Gillespie 1980
JOURNAL COMMITTEE	Mrs. E. Farquharson Miss N.F. Henderson Miss H. Jackson Miss J. Raeburn - Convener Mr. C.P. Rawcliffe Mrs. C. Stewart
EXCURSION COMMITTEE	Mrs. E. Farquharson 6 Chamberlain Road, Edinburgh EH10 4DN Miss B. Gordon, 17 Argyle Crescent, Edinburgh EH15 2QQ Mrs. H.M. Miller 72 St Albans Road, Edinburgh EH9 2PG
RECORDS SECRETARY	Miss M. Mowat 45 Merchiston Crescent, Edinburgh EH10 5AH
EXCURSION REPRESENTATIVE on the COUNCIL	Miss B. Gordon
LIBRARIAN	Miss F. Howie 3 Wellington Street, Edinburgh EH7 5EE Tel: 031-556-6471

CONTENTS

	Page
EDITORIAL	2
WINTER INDOOR MEETINGS	4
THE EDINBURGH COASTLINE	7
FORTH ISLAND BIRD COUNTS 1980	10
GLADHOUSE - LOTHIAN'S NEWEST LOCAL NATURE RESERVE	11
A BUTTERFLY SECTION	
Butterflies - an exciting year	13
1980 - a Butterfly year	14
Painted Lady Butterfly	15
ADAPTIONS OF AQUATIC INSECTS	16
DRAGONFLIES	
Dragonflies at Aberlady	19
Dragonflies 1979 - 1980	20
MOSSES IN AN EDINBURGH GARDEN	21
DUTCH ELM DISEASE IN THE LOTHIANS 1980	25
SOWING TIME	26
SOME NOTES ON TORRIDON DISTRICT	28
SOME NOTES ON NATURAL HISTORY	30
OBSERVATIONS MADE BY MEMBERS DURING 1980	33
EXCURSIONS 1980	35
REPORTS AND EXTRACTS FROM REPORTS	37
ADDITIONS TO THE LIBRARY IN 1980	53

EDITORIAL

It will be realised from articles, observations and notes in this Journal that during 1980 members followed their interests well outside as well as within the Edinburgh area. There cannot be many (if any) journals on natural history in Scotland and England published recently which have not mentioned the invasion of the Painted Lady Butterflies and the increased sightings in 1980 of other species. Ours is no exception with its articles on butterflies written with infectious excitement and humour.

Once again the Excursion Committee organised a very interesting programme which included three very successful weekends to the Jedburgh area, to St. Cyrus and to the Blair Atholl area. Short reports of these and of some of the one day outings are included in this Journal. We thank the Excursion Committee as well as the many friends of the Society and our own members who have led us on these occasions. Much planning and thought go into the preparation and running of even the shortest excursion.

As mentioned in last year's Journal the Society, with money from the Ian Sime Fund, purchased in 1979 three microscopes for loan to members. These have been well used throughout 1980. A further purchase this year has been a Stereo Magnifier (magnification x15 and x30) which is proving very useful in studying, for example, flower structure (especially of small flowers, such as grass flowers) and insects. It is hoped that any member who would like to borrow a microscope or the Stereo Magnifier will apply to do so. Borrowing arrangements are given on the next page.

The Council has also decided, with the help of the same fund, to sponsor a member or members at a Field Centre or at some other natural history meeting. Details about this are given overleaf.

Our thanks go to the Secretary for all her work for the Society throughout the year and to all those who have helped the Society in any kind of way. We give especial thanks to Miss P. Wilson who has relinquished her post at Minutes Secretary after more than fifteen years of very hard work. We welcome Mrs. Sheila Litteljohn in her place. Also we are glad that Mr. Gordon Finnie and his associates and Mrs. F.J. Anderson have been ready to help us once again with the production of this Journal.

During the year resignations have been received from Mrs. A.S. Beath, Mr. A.B. Dalziel, Miss I. Dick, Mr. and Mrs. C. Dow, Mrs. W. Fairbairn, Mr. F. Gorman, Miss A. Wallace and Mrs. E.A. Worland.

We record with sorrow the deaths of Miss Agnes Impett, Mrs. L. Macrae and Mrs. O.H. Shennan.

ATTENDANCE AT FIELD CENTRE OR NATURAL HISTORY MEETING

As stated in the Editorial, the Council would like to sponsor a member at a Field Centre or at some natural history meeting.

In selecting someone to go Council will give priority to one (or two) members in the younger age group who could not afford to go without some financial help.

But if there is an older member who is keen to go, but because of escalating costs cannot afford to do so, he or she should feel free to apply.

Applications accompanied by a letter giving details of the study or project planned should be sent to the Secretary as soon as possible.

(A copy of the book which gives a list of all the Field Centre courses may be borrowed from the Secretary.)

ARRANGEMENTS FOR MICROSCOPE BORROWING

A member borrowing a microscope will be asked to sign a receipt and deposit £5.00, returnable on return of the microscope less any expense necessarily incurred for cleaning and repairs after use.

Borrowers will be responsible for any repairs costing more than £5.00, required because of negligence.

Return of a microscope for checking may be requested after a period of four months. Borrowing may then be renewed, provided the instrument is not needed by another member.

Members who want to borrow a microscope should apply to the Secretary.

It is hoped that members who have never used a microscope before will feel free to apply but, as a microscope is a delicate instrument, beginners must accept help in its use.

A list of instructions will be issued with the instrument.

These arrangements will be reviewed after two years.

ARRANGEMENTS FOR BORROWING STEREO MAGNIFIER

These are the same as for a microscope except that in the first place the instrument will be lent for a period of one month.

WINTER INDOOR MEETINGS 1980

The speaker at the January meeting was Mr. Christopher Mylne, Scottish naturalist and creator of outstanding wildlife films. His topic was "The Techniques of Filming Wildlife".

Mr. Mylne gave a vivid account of the rigours and rewards of wildlife filming, at the same time revealing some of the tricks of the trade. He said that most of his work was for television and, as that required close-ups, two essential aids were the telephoto lens and the hide. The telephoto lens acted like the human eye - it selected and concentrated on the particularly interesting part of a general landscape. The placing and construction of a hide required great care and patience over a period of time if one were not to disturb the wild creature's routine or arouse its suspicions. One must never underestimate the intelligence of animals, and it was absolutely essential to be a good naturalist to be a successful wildlife photographer. Many difficulties had to be overcome and much physical discomfort endured. One must also be an opportunist, especially when time and money were short, and he quoted as an example a week he had spent in the Highlands hoping to get 'snow shots' of the wildlife of the region. The weather refused to co-operate and he had to film whatever offered, following up any unusual behaviour of bird or beast, hoping the film would come in useful sometime. "Shoot, or you'll regret it", was his motto.

There were other tricks of the trade, such as mirrors to get light into dark corners, e.g. in the filming of the St. Kilda Mouse and Wren, or the use of white feathers to attract a nesting bird to a particular spot. Sometimes the whole scene had to be fabricated to get close-ups of an animal behaving naturally in its usual kind of habitat; and one had always to get shots that would fit together to tell a story. But always, the animal dictated the pace and the development.

Mr. Mylne illustrated his points with some splendid stills, a piece of unedited film and a delightful sequence featuring Poppy, a weasel living with the family in a Perthshire gamekeeper's home.

In February the Society was addressed by Dr. A.J. Silverside of Paisley College of Technology, an authority on the flora of Britain, especially plants which had come in in the last 200 years. His subject was "Monkey-flowers, attractive invaders from the Americas".

Before coming to Monkey-flowers, Dr. Silverside talked about some of the plant invaders of our shores, most of them with only a local distribution. Many had come in on ships in the course of trade. He instanced the Spiny Cocklebur and Green Pigweed which he had found in south-east England, where imported shoddy had been used as fertiliser. In the Scillies, plants like Bermuda Buttercup, Gladiolus, Rosy Garlic, introduced for agricultural purposes, were now weeds in the bulbfields. Opium Poppy, which he had photographed in Kent, Fyfield Pea photographed in Essex, Birthwort near an Oxford nunnery, Bladder-senna on railway banks near London, the Pirri-pirri-bur on Holy Island, Red Valerian on old walls in coastal Berwickshire, a Lupin from Alaska in northern river shingle beds, Russian Comfrey, White Butterbur and Giant Hogweed were all examples of incomers, some useful or colourful, others a nuisance. Of all the invaders, the Monkey-flower had the greatest success story, as it had managed to spread right up to the north of

Scotland, having been first introduced here from the Americas about the beginning of the nineteenth century. The speaker illustrated for us four distinct species - *Mimulus guttatus*, with four flowers open at once forming a square head, red dots in mouth of tube, widespread by shallow streams up to the north coast of Scotland and reaching high altitudes; *Mimulus luteus* (Blood-drop-emlets), red blotches on lips and more open throat, which spread more slowly and now quite rare; *Mimulus cupreus*; and *Mimulus variegatus*. Many hybrids of these were to be found in the wilds, mostly in shingle beds in the Lake District, the Scottish Borders, the Spey Valley, Orkney; a triple hybrid of *luteus*, *cupreus* and *guttatus* in the Pennines and a very red hybrid on the north coast of Scotland. He, himself, had developed several attractive cultivars but had a word of warning for anyone introducing garden cultivars into the wild - would they inform some botanical authority so that the introduction would be recorded officially. Dr. Silverside illustrated his points with excellent slides.

March saw the return of Lt. Cdr. Spragge to continue his saga of travel in South America, particularly in the Valley of the Incas. The speaker recalled how, in the sixteenth century, the Spaniards had penetrated the Pacific coast of the Americas and how the ageing Pizarro had been bidden to discover the rumoured, rich civilisation in the foothills of the Andes. This led to the eventual conquest of the Incas whose empire at that time stretched from Ecuador to Argentine.

In 1976, Lt. Cdr. Spragge and the party of linguists from St. Andrews University had reached Cuzco, the Inca capital, and had set up camp in an old farmhouse in a valley over the hill from Cuzco. Traces of Inca occupation could be seen from the back-door - bits of old terraces, a look-out tower, the line of an irrigation channel which still carried water from a mountain lake to the local peasants' plots. Exploring the mountain side behind the farm, the expedition was too late to find buried treasures but, amongst the human remains in old tombs, were skulls with holes bored in them. The Incas were evidently skilled trepanners, but why? The valley was full of marvellous archeological sites. Commander Spragge described visits to three of the most exciting: (1) on the river at Pesac, formidable flights of steps and a temple on a high col. Slides showed the remarkable masonry, walls formed of great blocks of igneous rock, openings topped by great flat stones and in the middle, a ceremonial bath. Terracing had carried cultivation to 14,000 feet or more. (2) A site the tourist never reaches, high up on a hill and reached by climbing through several distinct cactus zones with a cascade of lupins on the way - a fort with great defensive blocks and a parade-ground where, on the day of their visit, a man was ploughing with a pair of oxen. The terraced hillsides had been intensively cultivated but now only a few patches were under crops. (3) The city of Machu-Picchu, only discovered in 1911, and now a mecca for tourists. It had a spectacular setting above the valley of the Urubamba, with ramparts, ditches, watch-towers, stairs, cultivated terraces, gabled houses and palaces, and, at the highest point, the Temple of the Sun. A narrow Inca road runs from it along the ridge of the mountains. Was it the last refuge of the Incas? Of the human remains found there, ninety per cent were female. Cuzco also had its defensive constructions and old Inca walls on which the Spaniards had built and which had withstood the devastating earthquake of the 1960's and doubtless others before that. The party left Peru from Lima where there was an excellent museum in which Inca artefacts could be examined.

The lecturer enhanced his lively descriptions with excellent photographs.

The April meeting was Members' Night. Elizabeth Farquharson had a small exhibition of skulls, mostly of small mammals, collected and prepared by herself. Jacquie Muscott showed beautiful slides of some of the rarer flowers, butterflies, moths and caterpillars she had seen in Scotland and John Winham took us to the high, wild places for his shots of the rarer Scottish Alpines. Jimmie Steel of the Y.O.C. gave an account of the survey carried out by them on the Water of Leith in the previous May and October to determine, in particular, the frequency of occurrence of the Dipper, the Grey Wagtail and the Moorhen.

After coffee, David Stranoch showed slides of the flowers, native and exotic, of the Scilly Isles, and Elizabeth Landells gave a brief account of a month's visit to Ethiopia with slides illustrating the terrain and its varied bird-life.

In October, after the business of the A.G.M., the address was given, as is customary, by a member of the Society, Mr. Kenneth Sanderson, who combined his experiences on two holidays in February 1979 and 1980, to show us something of the bird and other life of India and Nepal. At that time of year the birds are preparing to fly north to Russia etc. to nest, but, because of drought conditions in 1980 there was a considerable drop that year in the avine population at normal marsh sites. Under the leadership and guidance of the eminent bird photographer and naturalists, Eric Hosking and Dr. Jim Flegg, the party visited certain specific locations - the Delhi Zoo where wild birds were free to come to feed and nest, the Bharatpur and Sultanpur marshes, the Red Fort at Agra and the Taj Mahal, Jaipur, and, in Nepal, Katmandu and the forest of the Chitwan National Park. A tremendous variety of birds was seen - storks, egrets, cranes, herons, ibis, eagles, buzzards, vultures, kites, kingfishers, geese, drongos, swallows, woodpeckers, bee-eaters, sunbirds, house-crows - and everywhere the keen eye of the observer and the camera recorded. Among some superb photographs, one recalls particularly a beautiful dawn shot of a Grey Heron standing in a misty lake. Other shots recorded typical flora and fauna, scenes of village life, varying modes of transport, historic monuments and a dramatic photograph of Everest at dawn taken from the plane on a short sidetrip to the Himalayas. Such was the variety and quality of the slides shown one felt that Mr. Sanderson must have spent a lifetime in India rather than the fortnights which his holidays lasted.

November brought back an old friend, Chief Supt. Alastair Smith of Tulliallan Police College, to take us on his Tern Travels covering three continents. Mr. Smith first identified, with the aid of superb slides, the five species of sea-tern nesting in Britain, describing and illustrating their different breeding and feeding habits as observed by him over many years at the Ythan estuary in Aberdeenshire. He then followed the birds to their winter quarters on the West African coast where the different species stop at different latitudes. At Freetown, one of the best 'recovery' areas, he picked up birds he had ringed in Scotland. As terns feed on fish remains in these parts, he moved down the coast to the fishing villages of which and of their friendly inhabitants he showed some lovely slides as well as shots of many varieties of wildlife. From Africa Mr. Smith whisked us across the Atlantic to Canada where, at Lake Ontario, amongst a huge colony of sea-birds, he had spotted through binoculars groups of Caspian Terns. He hoped to return there some day to study these large birds and see more of the varied wildlife much of which he had already managed to capture in his camera, as evidenced in his fine slides.

The last lecture of the year was given in December by Dr. J. Sheldon, Lothian Region Ecologist. His subject was "Trees in the Lothian Landscape Past, Present and Future". The speaker said that from being about seventy per cent afforested in the peak period after the Ice Age, the country was gradually cleared by man for fuel, building materials and growing crops till, by the fifteenth century, woodland cover was down to twelve per cent. This process continued till the present day and though, in the eighteenth and nineteenth centuries, many big landlords planted woodland belts as status symbols and shelter, these were now either mature or in decay. What must be done now so that in 200 years others could still enjoy a wooded landscape? Private landowners could seldom now afford to employ a forester and, also, modern farming, with its big machines, was inimical to copses and hedges. Surviving woodlands were contaminated by non-native trees and where there was no natural woodland there was no undergrowth nor wildlife. Recently, Dutch elm disease had been added to the hazards not to mention development and vandalism.

It was about 1947 that the Forestry Commission stepped in to increase the woodland cover once more but then mostly by introduced conifers. What were the public authorities, concerned with environment, doing about it? In the Lothians, firstly Dutch elm disease was being fought; replanting was being encouraged at playing-field sites and in gardens; schools were being assisted to develop tree nurseries; regeneration was being promoted on old oil-shale bings, birch being the most powerful recoloniser followed by willow, hawthorn, rowan and, hopefully, oak. Some tips had been redesigned and alders planted on their acid soils. About 200,000 new trees had been planted in a year. A hopeful development was that of the Central Scotland Woodland Project, begun jointly by Strathclyde and the Lothians, to utilise and improve the derelict land around Fauldhouse, a dreary landscape between Edinburgh and Glasgow. School children were being encouraged to take part in the experiment and the S.D.A were supporting this. In eighteen months 80,000 trees had been planted in West Lothian, one-third of them hardwood, but always the tree suited to the site. Altogether there was hope, especially in the utilisation of bad or waste land. Appropriate slides lent force to Dr. Sheldon's argument.

K.P. Wilson

THE EDINBURGH COASTLINE

At a first glance the Edinburgh coastline would not appear to be attractive for bird-watching, but it has its possibilities and these are worth exploring. Much of it is industrialised; but then birds are largely indifferent to the aesthetic qualities that attract us. Our coast stretches from the River Almond in the west to the Brunstane Burn in the east, some nine miles (15 km) excluding breakwaters and piers. It varies - there are sandy beaches, rocky parts, mudflats and man-made areas.

There are two lists in the Appendices, "Birds seen regularly" and "Birds seen occasionally". In order to avoid making them inordinately long I have only included seabirds and ducks, waders and a few passerines: it is a purely arbitrary choice.

Let us consider first of all the places easily accessible:-

Cramond - Granton Point mainly sandy shore.	This can be reached by car or bus, but note that the section Cramond to Silverknowes, a popular promenade, is open only to walkers.
Granton Point - Granton Harbour, rocky and heavily industrialised.	Accessible by car, bus or on foot, not very attractive.
Granton Harbour, exposed mudflats.	Almost useless. East Breakwater can be reached, but the West Pier is not open to the public. Access by car, bus or on foot.
Newhaven foreshore and Harbour, mainly deep water.	Access by car, bus or on foot. Occasionally good for duck close in.
Leith Docks, deep water, rocks and mudflats.	Docks open to public (cars and walkers), buses pass: note that Newhaven and East Breakwaters are closed to the public.
Seafield foreshore; mud, rock and sewage outfalls.	Access by car, bus or on foot; a good vantage point.

I will concentrate on Leith Docks because I know this area best. Over 25 years I recorded 98 species seen, out of a possible total of 130. Two oddities were a Curlew fished out of the Edinburgh Dock on 23 March 1958, and a Partridge rescued from East Old Dock (now filled in) by the S.S.P.C.A. on 16 May 1963. Many acres of Leith Docks were reclaimed from the Firth of Forth. Some tipped material was washed away and spread to form a mudflat between the Seawall and the Middle Craig Rocks. Almost every bird in the two lists has been seen here. Before the land behind the wall was built on for oil-related activities it attracted many birds, including Green Sandpiper, Shore Lark and Snow Bunting.

One great feature on the Docks is the "Stone Island" formed when a new entrance was cut to the Imperial Dock. The terns that had nested on the waste ground, and had been displaced by oil pipes, moved on to it. It is completely isolated and so is quite safe. Up to 70 pair of Common Tern plus a few pair of Arctic Tern bred there. If the surface were to be improved by the addition of gravel and/or turf it could be even better.

You may not get a Slavonian Grebe (Edinburgh Dock 10 January 1966), a Little Auk (December 1965 - January 1966), or a Storm Petrel (30 November 1965) but your visit should be worthwhile.

At the east end of the Docks, where the Seafield foreshore begins, there is a sewage outfall: here masses of gulls of five or more species congregate. I never recorded a Little Gull on the south side of the Forth, yet they winter regularly in Largo Bay. A feature of this shore is the big flock of wintering Greenfinches that are attracted by the masses of rotting seaweed.

APPENDIX 1: Birds seen regularly

Fulmar	<i>Fulmarus glacialis</i>
Gannet	<i>Sula bassana</i>
Cormorant	<i>Phalacrocorax carbo</i>

Shag	<i>Phalacrocorax aristotelis</i>
Mallard	<i>Anas platyrhynchos</i>
Scaup	<i>Aythya marila</i>
Tufted Duck	<i>Aythya fuligula</i>
Pochard	<i>Aythya ferina</i>
Goldeneye	<i>Bucephala clangula</i>
Eider	<i>Somateria mollissima</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Oystercatcher	<i>Haematopus ostralegus</i>
Lapwing	<i>Vanellus vanellus</i>
Ringed Plover	<i>Charadrius hiaticula</i>
Turnstone	<i>Arenaria interpres</i>
Curlew	<i>Numenius arquata</i>
Bar-tailed Godwit	<i>Limosa lapponica</i>
Common Sandpiper	<i>Tringa hypoleucos</i>
Redshank	<i>Tringa totanus</i>
Dunlin	<i>Calidris alpina</i>
Arctic Skua	<i>Stercorarius parasiticus</i>
Great Black-backed Gull	<i>Larus marinus</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Herring Gull	<i>Larus argentatus</i>
Common Gull	<i>Larus canus</i>
Black-headed Gull	<i>Larus ridibundus</i>
Kittiwake	<i>Rissa tridactyla</i>
Common Tern	<i>Sterna hirundo</i>
Arctic Tern	<i>Sterna paradisaea</i>
Sandwich Tern	<i>Sterna sandvicensis</i>
Rock Pipit	<i>Anthus spinoletta</i>
Pied Wagtail	<i>Motacilla alba</i>
Greenfinch	<i>Carduelis chloris</i>

APPENDIX 2: Birds seen occasionally

Red-throated Diver	<i>Gavia stellata</i>
Great Crested Grebe	<i>Podiceps cristatus</i>
Wigeon	<i>Anas penelope</i>
Long-tailed Duck	<i>Clangula hyemalis</i>
Velvet Scoter	<i>Melanitta fusca</i>
Common Scoter	<i>Melanitta nigra</i>
Shelduck	<i>Tadorna tadorna</i>
Coot	<i>Fulica atra</i>
Whimbrel	<i>Numenius phaeopus</i>
Purple Sandpiper	<i>Calidris maritima</i>
Razorbill	<i>Alca torda</i>
Guillemot	<i>Uria aalge</i>

Reference

A Species List of British and Irish Birds, BTO Guide 13.

C.P. Rawcliffe

FORTH ISLAND BIRD COUNTS - 1980

	Craigleith	Lamb	Fidra	Eyebroughty	Inchkeith	Inchmickery
Fulmar	53+	1	88		451	
Cormorant	98	64		37		c32
Shag	193+	143	25		3	X
Gt Bl Back	3					
Lesser Bl Back	130+	c5	X		X	
Kittiwake	670	57	354		207	
Common Tern						533
Roseate Tern						21
Sandwich Tern						424
Razorbill	40+	5+	13		29	
Guillemot	c1550 bds	(840)	38		5	
Puffin	2000 bds		100 bds		440 bds	

- Fulmar - occupied sites not necessarily breeding
 Craigleith Guilmeots - birds on breeding cliffs
 Puffin - all birds on land or offshore
 All others - pairs or nests

Inchmickery counts by permission of the R.S.P.B.

1980 struck a new low with the island trips due to poor weather conditions. It started with a landing on Inchmickery (with the R.S.P.B.) and the spring drought ended with two hours of heavy rain making counts impossible. On Craigleith, about three-quarters through the count, the 'mizzle' gave way to torrential rain soaking us to the skin. Lamb and Fidra were not counted till 2 July - at the fourth attempt. Inchkeith was our best day with only a half-gale from the south but dry! The difficulties of getting out to Lamb and Fidra are compounded by the current economic situation with the boatmen unwilling to spare two hours ferrying a small party between islands instead of a lucrative two boatloads of trippers round the Bass. Reluctantly we have decided to try to get out to these islands on a private basis in 1981 when it might be possible to pick a good mid-week evening if weekends are poor.

For the second year in succession there has been a tendency for most breeding bird numbers to be more stable after first a long period of increase then, during the second half of the 1970's some abrupt decreases. The late Lamb/Fidra visit and the wash-out on Craigleith mean that the 1979 and 1980 counts are not strictly comparable but the general picture is satisfactory. One strong increase was of Kittiwakes on Fidra (from 258 to 354 nests) and on Craigleith (510 to 670) but there were fewer on the Lamb. This comes after some signs of decrease in the Forth area. It may be that the factor(s) which reversed the long years of increased breeding numbers (red-tides are one possibility) have not operated during the last two years allowing the species to increase once more. Otherwise it is possible that the population is reaching a natural peak and numbers are merely fluctuating around a mean - depending on good or bad breeding or feeding conditions.

One bird which has not done well this year is the Eider with only 20 nests on Craigleith in May compared to 96 last year. Things were better, but still low, on Fidra with 126 nests (R.S.P.B.). Terns, too, have had a bad year with Roseates at their lowest for 30+ years with only 21 pairs (R.S.P.B.). The situation has now reached a critical stage for this very attractive bird, though I understand that other British colonies have had a better year. A newcomer to the islands' breeding list was a pair of Greylags with two small young on Inchkeith in June. These are most likely to be from the large feral flock at Duddingston. After many years of increase, numbers there have apparently stabilised and in 1980 there was a new development with an apparent colonising trend with birds being seen on the Pentland and Moorfoot reservoirs and even two on the Marl Loch. On 7 June on the Bass the south-east wind had brought in one or two nice things including four Painted Ladies, six Large Whites and a very elusive Firecrest in the top garden.

R.W.J. Smith

GLADHOUSE - LOTHIAN'S NEWEST LOCAL NATURE RESERVE

On the 1 November 1979 Gladhouse reservoir at the foot of the Moorfoot Hills was designated a Local Nature Reserve by Lothian Regional Council¹. Exactly one hundred years before the reservoir had been built to supply water to Edinburgh and Midlothian, and it has remained the principal source of drinking water for the City ever since. The reservoir holds about 1821 million gallons of water when full, receiving water from the Moorfoots. In the summer water is also pumped in from the River Tweed, to meet demands when rainfall is normally low. However, in about 1982, to meet the predicted increase in demands through to the next century, a new reservoir, the Megget, which is now being built in the hills west of St. Mary's Loch, Selkirkshire, will supplement the Gladhouse supply; Gladhouse will then be used to hold the additional water as it is pumped on its way to Edinburgh, as well as receiving the water from its own catchment area.

With a backdrop of the Moorfoot Hills, the wooded islands and shores give the reservoir an appearance of a natural loch with fine views of the hills to the south. Such a freshwater loch provides the ideal habitat for waterfowl and because of its use as a winter roost for thousands of Pinkfoot geese, and also smaller numbers of Greylag, the reservoir was classified a Grade I site of international wildlife importance in the Nature Conservancy Council's wildlife conservation review in 1977². It was because Gladhouse was the only Grade I site in the Lothians for which no management of the wildlife habitat had been planned that the Regional Council declared it a local nature reserve. This enabled all interested parties, including the Rosebery and Arniston estates that have sporting rights to the reservoir, the Nature Conservancy Council, the Scottish Ornithologists' Club and W.A.G.B.I., to come together to form a management committee to plan the future management and development of the reserve under the lead of the Regions' Planning Department.

This committee is now at the stage of considering the management plan for the reserve although whatever developments are agreed to must obviously take place within the constraint that Gladhouse supplies drinking water. Thus, any aspect that might provide a source of pollution must be considered very closely by the Water Supply Service of the Regional authority, that owns the reservoir, before it can be agreed to.

As well as being a very important winter refuge for geese, Gladhouse has a reputation as a winter roost for mallard and wigeon, with teal, golden-eye and tufted duck using the reserve in the late autumn. Although it might also be thought that the reservoir would provide an ideal breeding ground for water fowl, its use by mallard, teal and wigeon has in fact decreased over the years as indicated by detailed records that have been kept by local ornithologists.

There are perhaps two principal reasons for this. Firstly, the drawing off of water during the summer with little replacement water coming from the surrounding hills, results in a marked lowering of the reservoir, even in a summer such as experienced in 1980. As a consequence, extensive mudflats appear, especially along the south and western areas of the reservoir where its basin is much shallower. The mud is soon colonised by *Littorella uniflora* but this annual event prevents the development of a good marshland fringe such as is found at the Bavelaw marsh end of Threipmuir reservoir, Balerno, which provides ideal breeding cover. With this drying out it also means that the distance between the water and the shore cover is longer and this may contribute to an increase in mortality of the young because of their greater vulnerability to predators as they make for the water.

A second reason may certainly be attributed to mink which have been regularly recorded in the area. The disturbance and predation caused by this very migratory animal would certainly reduce the value of the shores for breeding.

Together, both of these problems would seem to make the reservoir less attractive for breeding waterfowl but its improvement potential can certainly be recognised and the future now holds brighter prospects. With the co-operation of the gamekeeper from the Rosebery estate, for example, mink are now regularly trapped and to indicate the scale of the problem, 27 were caught in the first six months of the trapping campaign. Furthermore, once water from the new Megget reservoir is pumped through to Gladhouse, it is predicted that a drop of no more than about five feet should be expected during the summer. With a more constant water table and shore length, better cover, and hence breeding conditions, may be created - to bring the reservoir back to its former quality as a refuge for wildfowl. While now a visitor may be disappointed by the few duck to be seen on the water it is hoped that by proper management this can be changed.

It is factors such as these which must be considered in the management plan but any proposal must be based on factual information and during 1980, following the publication of the "Preliminary Study - 1979"³, which identified the gaps in our knowledge of Gladhouse, various surveys were carried out. A comprehensive vegetation survey was undertaken during the summer and on the findings of this, proposals for the management of the woodlands, the improvement of habitat and the possible introduction of new cover, have been considered. Of course in this the interrelationship of the vegetation with the birds must be assessed for example, the invasion of the shore line by willow scrub may be a nice bonus for some species but when it begins to invade shingle beds which are used as nesting sites for dunlin then a management problem begins. Such conflicts need to be properly discussed before prescriptions are agreed to and in 1981 the management team has the job of working through problems such as this.

In addition to the management of the wildlife, other aspects of the future of the reserve must also be looked at to avoid conflicts and to ensure that the reserve is properly developed. The landscape of Gladhouse already draws both locals and tourists to the reservoir and to assess this a survey of visitors has

been carried out. Various schools are involved in the planning of interpretation and the educational role of the reserve. A seasonal ranger was employed at the reserve during the past summer and even if a full time ranger cannot yet be appointed it is hoped that a seasonal ranger will again be at the reserve in the coming summer.

Apart from behind the scenes activity and the start of management work such as mink control, there is little as yet to show at Gladhouse. In fact from the visitor's point of view nothing would appear to have changed. There is no permit system and no new facilities have been provided. Indeed, great care must be taken in the development of the reserve and whether it is better car parking, interpretation of the reserve, or provisions to cater for visitors wishing to have a closer view of the birds, these will only come after all the factors involved have been assessed. Gladhouse is after all a water supply reservoir and the narrow roads were designed to cater only for the local traffic. Any innovations must take this into account and it will be a little while yet before it will become more apparent that Gladhouse is our newest local nature reserve.

J.C. Sheldon
Regional Ecologist

References

1. "Declaration of Gladhouse Local Nature Reserve". 1 November 1979. The Scotsman.
2. "A Nature Conservation Review". 1977. Cambridge University Press.
3. "Gladhouse Local Nature Reserve - Preliminary Study 1979". Lothian Regional Council, Department of Physical Planning (1979).

Footnote

A copy of the "Preliminary Study" is held in the Library of E.N.H.S.

A BUTTERFLY SECTION

Butterflies - an exciting year

For me this has been a most rewarding year - my first sightings in Scotland of the Orange Tip, the Ringlet and the Wall Brown, and George Thomson's book, "Scottish Butterflies", the first ever on butterflies of Scotland, has appeared.

In the Society's 1976 Journal (page 12), A.J. Smith wrote of the re-discovery of the Orange Tip in the Borders and E.M. Smith in the 1977 Journal (page 11) reported one seen on the Union Canal. In the long hot spring of this year, this northward spread was confirmed. An entomologist friend, Jim Salvona, told me that he had seen several on 10 May in Calderwood Park, West Lothian, and on the 24th in Roslin Glen (three males and two females). I myself saw a male in Braemar village on 8 June. Two larvae were seen on Jack-by-the-Hedge (Garlic Mustard) at Kalemouth, Roxburghshire, on a E.N.H.S. outing there on 28 June.

Has anyone seen them between the Lothians and Braemar?

Another recent discovery has been the Wall Brown on the Berwickshire coast. In 1978 E. Hamilton reports seeing five or six (1978 Journal, page 31) and this year I saw one on Fast Castle on 13 July - an early sighting for Scotland. On the same day near Meikle Poo Crag I handled my first Ringlet in Scotland. The Ringlets are easily captured - too easily unfortunately! - but as their upper side is similar to that of the male Meadow Browns, I have probably overlooked them in the past. We seem to have lost them in their previous Lothian haunts.

I was glad to see the Green Hairstreak at Strontian, Argyll, on 18 May.

It has, of course, been a Painted Lady year with a widespread immigration in south-east Scotland. Jim Salvona has seen them in numbers in the Belmont area of Corstorphine on 9 June and 16 August and I saw two there on 22 August. Other dates and places are 8 June (Cairnpapple), 22 June (Edgarhope, Lauder), 5 July (St. Cyrus with E.N.H.S. party), and 13 July (Pettico Bay, St. Abbs).

Jim Salvona discovered the Small Copper at Pinkhill, in Edinburgh, on 16 August, a City site new to me for this butterfly. The Small Tortoiseshell as usual has turned up in the City centre (thanks be for nettled 'gap-sites'!) at the end of August, this year at Lauriston, the Meadows and Goldenacre.

So far I have noted the Red Admiral on 28 June at Kelso (E.N.H.S. walk), 22 August at North Berwick, and 31 August at Mayfield, Dalkeith.

(I am glad, too, to note the Poplar Hawk Moth still established in the Meadows, where I found a specimen of its magnificent larva on 6 August.)

We are so often told how poor the Lothians are for Lepidoptera that it is encouraging to note in George Thomson's book, page 50, that even the Northern (Mountain) Argus (*artaxerxes*) could still perhaps turn up again on Arthur's Seat. He believes that slight climatic change is the main factor (not over-collecting, fertilisers and the rest) in the disappearance and re-discovery of species.

W.B. Grubb

Reference

Thomson, G. The Butterflies of Scotland, pub. Croom Helm.

1980 - A butterfly year

Although the summer of 1980 is said to have been the worst for 37 years, bringing us a variety of strong cold winds, some fog, and at times very heavy rain, it will stand out in my mind as a "Butterfly Year", and in particular as the year of the Painted Lady.

These beautiful brown and orange butterflies have been seen in many parts of Scotland. They were flying around the Island of Handa, in the west of Sutherland, and in the Orkney Islands in June. Early in July, we saw them on our Society's visit to the St. Cyrus National Nature Reserve. At the end of July and beginning of August, there was quite a big 'invasion' of the Lothian coast, with reports from Musselburgh and Aberlady; and I even saw one at Gladhouse Reservoir, about 800 feet above sea level, one very cold and windy day. For me, the week beginning 22 September was "Red Admiral Week".

These handsome butterflies were seen at places as far apart as Musselburgh, Morton Lochs in Fife, and Hopetoun. But my best butterfly day was undoubtedly 24 September when, at St. Abbs, we saw several Red Admirals, a Painted Lady, a Small Tortoiseshell, and a Large White all within about half an hour. The Red Admirals seemed to have a particular taste for ripe brambles.

M. Mowat

Painted Lady Butterfly (*Vanessa cardui*) - 1980

About 5 pm on 4 June my daughters reported a Painted Lady in a neighbouring garden at Dunbar. A little while later, one was seen in our own garden - perhaps the same individual, thought I. Later the same evening, the door bell summoned me from a mundane mixture of domestic and scholastic situations. Peter, the local butterfly expert, stood at the door, red-faced and pouring with sweat, cycle lying at the side of the drive. I was greeted by, "All right then, how many have you seen?" Thanks to family intelligence, the question was decoded.

Soon Peter and his old dominie were at the Terns Toilets, near West Barns, observing several Painted Ladies moving about their established beats, some apparently repeatedly circumnavigating the Countryside Commission conveniences. Considering that these individuals had, in all probability, just arrived from North Africa, their appearance was remarkably good. Returning to normality, it slowly dawned on me that among the marram grass was an almost abandoned lady, young, attractive, and not in need of paint.

The next day, there were reports from the N.C.C. of Painted Ladies in several places in the Borders and Midlothian. Later, from the S.W.T. - the information that they were everywhere.

With high pressure having developed over Central Europe, and an Atlantic low moving to the North of Scotland, atmospheric conditions had suited a mass migration of Painted Ladies from their homeland.

Soon these immigrant adults die off, but not before breeding.

On holiday in Yorkshire, later in the year, the following observations were made:

- 1 August - an excursion to Ripon, the burial place of St. Wilfrid who was imprisoned when he was at Dunbar - a few Painted Ladies seen.
- 2 August - up to limestone country in Ribblesdale - Painted Ladies very common.

Was the slightly warmer climate favouring this area to Lothian? No. On return, Archie Mathieson, Ranger, reported he had seen a similar emergence of the second brood at about the same dates. He had also noted this butterfly's habit of flying right on to dusk.

To see such large numbers of Painted Ladies here again, we must wait for similar conditions bringing over more migrants, as our winter climate kills off the next generation.

R. Weatherhead

More Sightings of Painted Lady Butterfly

- 1.6.80 More than 12 Painted Ladies seen at Belhaven on Spike Island. (E.H.)
- 2.6.80 Several Painted Ladies were seen in gardens along the Lanark Road West, Balerno. They stayed for 3-4 days. More were seen in this area during a few days at the beginning of July. (C.C.)
- 4.6.80 Four Painted Ladies on the Bass Rock (see page 11). (R.W.J.S.)
- 6.6.80 Painted Ladies seen at Penicuik. (E.H.)
- 10.6.80 Some members of the E.N.H.S. saw a Painted Lady on Handa Island, off the coast of Sutherland. (M.M.)
- 11.6.80 Two Painted Ladies seen on Lilac at Eskbank. (E.H.)
- 17.6.80 Painted Lady seen for the first time at Hopetoun, and on several occasions subsequently. (C.P.R.)
- 24.6.80 E.N.H.S. members saw several at Birsay, Orkney. (C.S.)
- 29.6.80 Painted Lady was seen in the Hermitage at the east end on the path towards the Braid Hills by Mr. C. Mcleod of 25 Fowler Terrace, Edinburgh. It was confirmed by the Royal Scottish Museum. (C.S.)
- 3.9.80 A number of Painted Ladies seen in the Selkirk area, presumably progeny of earlier migrations. (A.J.S.)

ADAPTIONS OF AQUATIC INSECTS

In order to live in water insects have adapted in several ways. One important adaption was their method of obtaining oxygen. All aquatic insects did not evolve the same method.

The aquatic insects can broadly be divided into two groups:

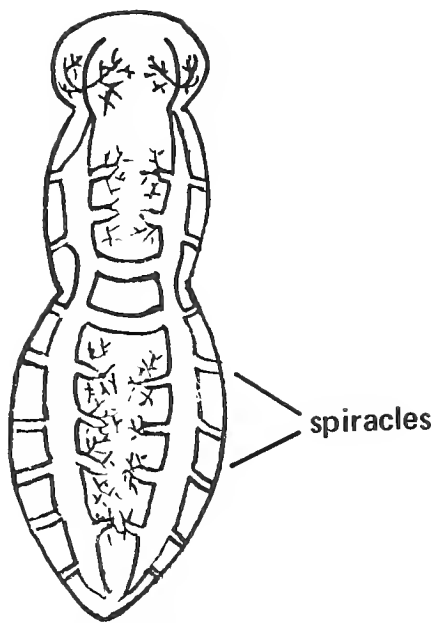
1. Insects which spend all their time in water. These are air breathers.
2. Insects which spend only their larval stage in water and the adults are free flying. The larvae take oxygen from the water.

These insects will have been observed by members on the "freshwater fauna outings".

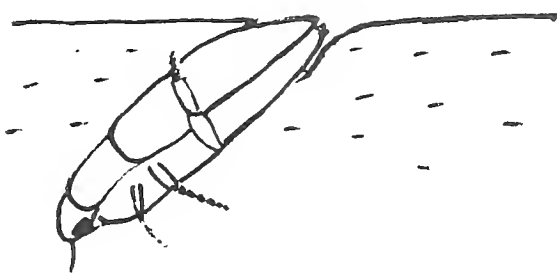
The first group contains Coleoptera (beetles) and Hemiptera (boatmen and bugs).

In all insects, oxygen is taken to all parts of the body by a network of branching tubes, known as tracheae. These tubes lead from openings in the skin called spiracles, which are situated down each side of the body. The tracheae branch freely throughout the body becoming smaller and smaller till the finest are only one thousand of a millimetre in diameter. In this way oxygen from the air is taken to all parts of the body.

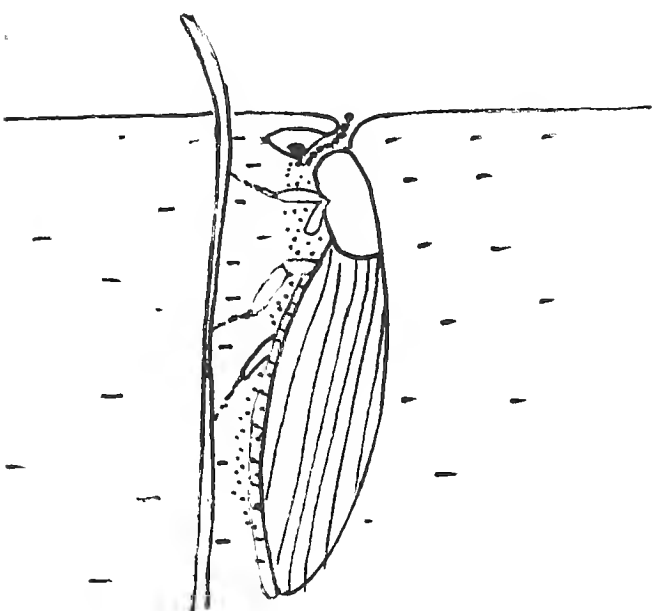
In aquatic insects the spiracles are in contact with a supply of air, held in a bubble against the body. In the Dytiscidae family of beetles, in which there are about 106 species, the adult places the extreme tip of the



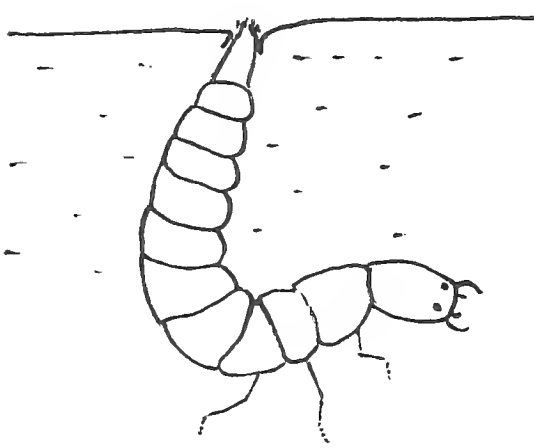
Tracheal system
of an insect



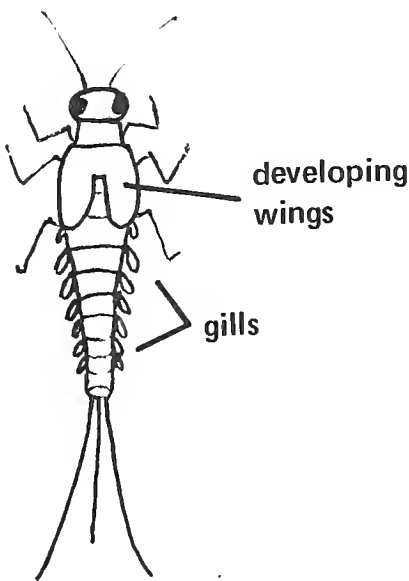
Dytiscidae beetle
at the surface for air



Hydrophilidae beetle at
the surface for air

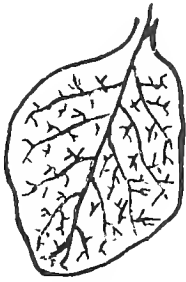


Dytiscidae larva

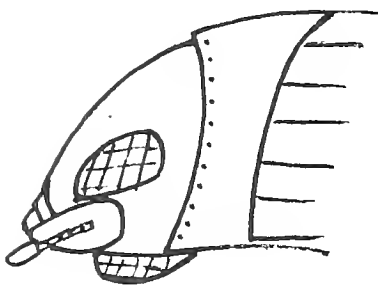


Mayfly nymph

developing
wings



gill enlarged



Eye of the whirligig beetle
(side view)

abdomen out of the water, thus placing a pair of spiracles in contact with the air. Dytiscidae beetles hold their air supply between the elytra (the hard wing cases) and the body, so with the tip of the abdomen out of the water this air supply can be replenished. The larvae also rise to the surface and extrude the tip of the abdomen where there is a pair of spiracles. In many of the larvae the rest of the abdominal spiracles are functionless. Dytiscidae are good swimmers and occur in flowing and still water.

The Hydrophilidae is a large family of beetles in which about 85 species are aquatic. They are poor swimmers and crawl on stones and vegetation in still water. The Hydrophilidae hold their air supply under the thorax and abdomen in a bubble held together by hydrofuge (water repelling) hairs. The beetle rises to the surface, places its body slightly sideways and breaks the surface with one antenna, which is bent backwards around the eye. Hydrofuge hairs on the antenna help to form an air-way from the surface to under the body.

The Corixidae (Lesser Boatmen), Notonecta (Backswimmer) and Nepa (Water Scorpion) belong to the order Hemiptera. In the Hemiptera, the egg hatches to a nymph which resembles the adult except that the wings are not formed. At each moult the wings become more developed till the adult is formed. Corixidae and Notonecta store their air under the body - this gives them a silvery appearance when in the water. They break the surface with the tip of the abdomen. Long hydrofuge hairs help to keep the bubble in place.

Nepa has developed a long breathing tube, which extends from the tip of the abdomen and is used in a snorkel-like fashion.

In the second group all of the Ephemeroptera (Mayflies), Trichoptera (Caddis), Odonata (Damselflies), Plecoptera (Stoneflies) and Megaloptera (Alderflies) are aquatic in the larval stage and obtain their oxygen from the water by means of tracheal gills. The tracheal gills vary in shape from flat leaf-like to sausage shaped projections from the side of the body. The gills are supplied with a fine network of branching tracheae, which lead into the main tracheal system of the body. The tracheae of the larvae are air-filled as in the adult. Oxygen molecules in the water diffuse through the membrane of the gills and carbon dioxide molecules diffuse outwards. The gills can be flapped rapidly to bring fresh oxygenated water to the gills.

Cloeon dipterum, a common species of Mayfly in still water, and *Baetis rhodani*, a common species in running water, are very similar in appearance. *Cloeon* flaps its gills rapidly but *Baetis* has lost the ability to do this, but since *Baetis* is in running water, this inability does not have any serious effect.

Within the order Diptera (true flies), a few of the families have aquatic larvae - these are very varied in character and habit, some groups are air breathers, e.g. mosquito larvae.

Some Coleoptera and Hemiptera became adapted to living on the surface of the water. The surface film is generally a dangerous place to be, for an insect. Such is the power of the surface tension, that if an insect lands on the surface it becomes trapped and cannot escape. However, Gerris (skaters) and Velia (crickets) can overcome this problem and are able to move very

quickly over the surface. The second and third pairs of legs are held wide apart, the tips rest in depressions in the water, hydrofuge hairs farther up allow only the tips to break the surface and the backward movement of the legs allows the insect to row itself forward on the surface film.

Gyrinus, the whirligig beetle, can dive and swim or walk on the surface. Gyrinus has specially adapted eyes to see above through the air and downwards through the water. It has in effect four eyes. The larvae of Gyrinus live in the water and breathe with gills.

E. Gillespie

DRAGONFLIES

Dragonflies at Aberlady

Aberlady Bay has some records of Common Sympetrum (*Sympetrum striolatum*) but there is no recent record of breeding although TMB saw and photographed a male there in 1977. This year he determined to pay weekly visits to try to establish the status of this and other species of dragonflies. He found Green Lestes (*Lestes sponsa*) was abundant and breeding on the Marl Loch, all the intervening marshes and the dune slacks. They were recorded between 6 July and 31 August. Good numbers of Common Blue Damselfly (*Enallagma cyathigerum*) and Common Ischnura (*Ischnura elegans*) were breeding at the Marl Loch and the dune slacks.

On 1 August 1980, over 100 Painted Ladies were seen at Aberlady by other observers. On the following day, TMB, EMS and RWJ Smith saw about six yellow sympetrums (Darter Dragonflies) and photographed several of them in the field. Two were resting on a willow bush near the Marl Loch while the others were either among the vegetation at the dune slacks or sunning in a hollow in the dunes on a white piece of plastic litter. We handled one and found the wings quite soft and concluded that the sympetrums were in a teneral state, i.e. had not yet developed their mature colours. We did not, however, notice any exuvia (cast nymphal skin) on the emergent vegetation and it is apparently possible for teneral dragonflies to migrate so we cannot be sure that these had emerged from the local waters.

On 16 August, TMB got four adult male sympetrums (red in colour) and a yellow female at the Marl Loch. This included a pair egg-laying while flying in tandem, with the male flicking the female down so that her abdomen entered the water from time to time washing off the eggs. During the same day he saw three red sympetrums at the dune slacks. No less than 18 sympetrums were seen on 31 August, again including a pair egg-laying in the Marl Loch. All the sympetrums that were closely examined were found to be *Sympetrum striolatum*, the Common Sympetrum. *Sympetrum striolatum* is the commonest sympetrum in England and is widespread in the South. Though there were a few Scottish records pre-1960, it has been recorded since 1960 from only one Scottish locality and that was in Wigtownshire.

On 28 September 1980, TMB found one all-black darter dragonfly. It is one with which he is very familiar and is the quite unmistakable

Black Darter (*Sympetrum scoticum*). Only one was seen. The preferred habitat of this species is peat bogs and it seems likely that this individual had wandered some distance from its breeding pond. Distribution maps show that it has been recorded recently at Aberlady. In 1977 it proved to be breeding at Skinflats, Stirlingshire, in a small pond close to the Forth estuary.

T. Boyd
E.M. Smith

References

- Hammond, C.O. "The Dragonflies of Great Britain and Ireland". 1977. pub. Curwen.
Longfield, C. "The Dragonflies of the British Isles". 1949. pub. Warne.

Dragonflies 1979-1980

Records of occurrence near Edinburgh

During the last two summers bad weather has affected our dragonfly recording. Dragonflies do not tend to fly if the weather is cold, windy or wet. In such conditions they shelter low down in pond-side vegetation or on the leeward side of bushes or trees. Unless disturbed and put to flight they are very difficult to find.

1979-1980 records from 'new' waters and records from previously visited waters with 'new' species are listed below.

List of waters visited showing in which 10 km square each is situated

Linlithgow Loch	NT07	Selkirk Race Course	NT42
Bangour Reservoir	NT07	Lindean Reservoir	NT42
Harehope; Larch Pond	NT14	Marl Loch	NT48
Harehope; Spruce Pond	NT14	Dune Slacks; Aberlady	NT48
Logan Burn; Pentlands	NT16	Quarry Pond; East Linton	NT57
Carmelhill	NT17	Markle Castle Pond	NT57
Inverkeithing	NT18	Balgone	NT58
		Seafeld Pond; West Barns	NT67

Species recorded

1. Green Lestes	<i>Lestes sponsa</i>
2. Common Ischnura	<i>Ischnura elegans</i>
3. Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
4. Common Coenagrion	<i>Coenagrion puella</i>
5. Common Blue Damselfly	<i>Enallagma cyathigerum</i>
6. Common Aeshna	<i>Aeshna juncea</i>
7. Black Sympetrum	<i>Sympetrum scoticum</i>
8. Common Sympetrum	<i>Sympetrum striolatum</i>

Table showing species of dragonflies found
at the various waters (new records only)

	1	2	3	4	5	6	7	8
Linlithgow Loch		X			X			
Bangour Reservoir		X						
Harehope; Larch Pond					X			
Harehope; Spruce Pond					X			
Logan Burn; Pentlands Carmelhill		X	X		X			
Inverkeithing		X		X				
Selkirk Race Course		X	X			X	X	
Lindean Reservoir	X		X		X			
Marl Loch; Aberlady	X				X			X
Dune Slacks; Aberlady	X	X			X		X	X
Quarry Pond; East Linton		X			X			
Markle Castle Pond		X			X			
Balgone		X			X			
Seafield Pond; West Barns		X			X			

Note: For previous records from some of the above and other waters see E.N.H.S. Journals 1977, page 19, and 1978, page 28.

We are grateful to A. Buckham for the Borders records.

Coenagrion puella was found at a tiny pond by the shore near Inverkeithing on 30 June 1979, during an E.N.H.S. outing. That was a pleasant surprise as this species has not been recorded previously north of the Forth on the mainland of Scotland.

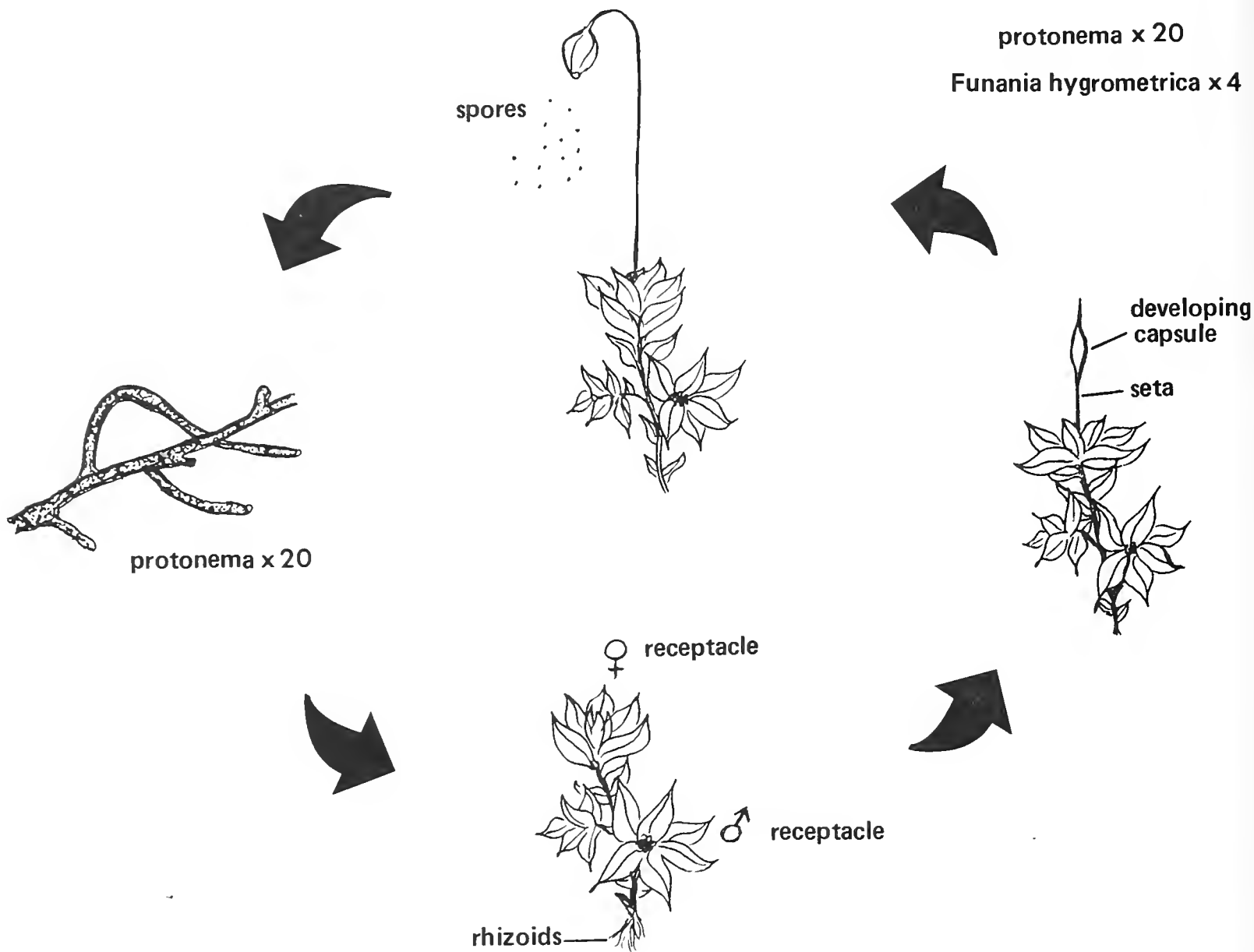
E.M. Smith

MOSSES IN AN EDINBURGH GARDEN

When a moss spore, a small seed-like unit, lands in a suitable damp place it begins to grow into a green thread-like mass, almost like a filamentous alga, known as the protonema. This photosynthesises and produces rhizoids, colourless thread-like outgrowths which absorb water, and buds from which the leaves grow.

A common moss, often found in pots in greenhouses, is *Funaria hygrometrica*. This moss has the male and female receptacles on the same plant. The male organs or antheridia form quite conspicuous 'inflorescences' which do look almost like flowers. The female organs or archegonia are less obvious, within a cluster of leaves at the tip of a shoot. The plant at this stage needs adequate moisture for the male cells or gametes produced in the antheridia to swim to the female or egg cells within the archegonia. Once fertilisation has taken place, the stem which is now known as the seta elongates beneath each fertilised egg. The seta carries at its tip the spore-producing capsule which develops from the egg. The capsule is covered by a hood which was

part of the archegonium at the base. As the capsule ripens it curves over and the hood falls off. The abundant spores are released as the capsule dries out. Being very small and light, they can be easily carried by the wind.



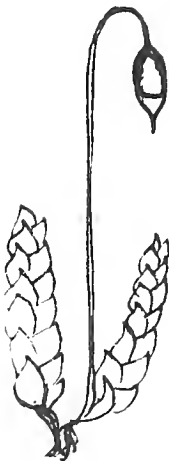
Another common moss in greenhouses is *Leptobryum pyriforme*. This has a very differently shaped leaf. The leaves at the top of the shoot are much longer than those near the base, and they are sharply toothed. The long seta is red, and the capsules are rounded.

Perhaps the most frequently seen moss in the city is *Bryum argenteum*. This grows especially in the cracks of pavements and along the bottom of walls. As its name implies, this moss has a very distinct silvery sheen. It can be very small, often only about a centimetre high. The leaves overlap closely so that the shoot looks smooth. The drooping capsules look large in comparison with the rest of the plant.

Growing on walls, especially on the mortar, is another small moss, *Tortula muralis*. The tufts are only a few millimetres high, but in winter the long yellow upright capsules are very conspicuous. In summer the capsules



Leptobryum pyriforme x 4



Bryum argenteum x 4



Tortula muralis x 4



Bryum capillare x 4

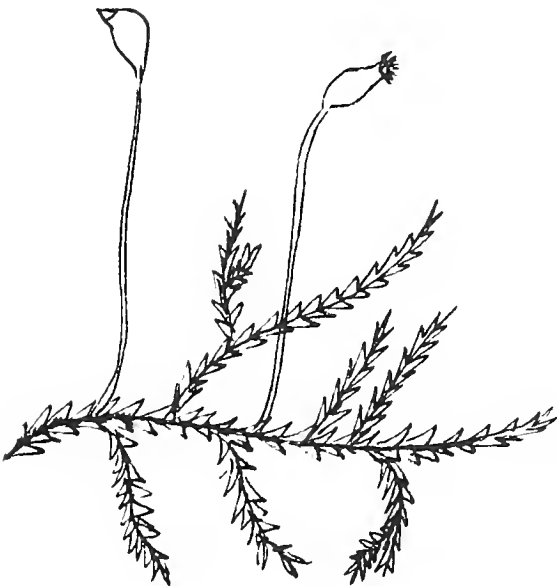


Barbula convoluta x 4

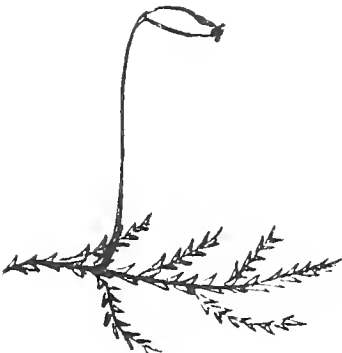


**sheathing
bracts**

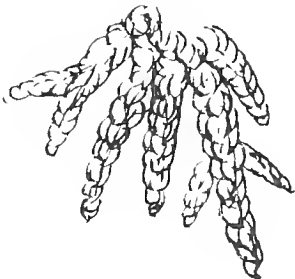
Bracts x 8



**Brachythecium
velutinum x 4**



**Amblystegium
serpens x 4**



**Hypnum
cupressiforme x 4**

are brown. Even without a hand lens one can see that in each leaf the nerve continues into a long thin hair point.

Also on the walls one often finds another *Bryum*, like *B. argenteum* only slightly larger and bright green. The leaves are not so closely overlapping and with a hand lens can be seen to have a long, narrow nerve continuing from the leaf tip. This is *Bryum capillare*. When dry the leaf tips very characteristically curl together into a corkscrew shape.

A similar moss without the hair point nerve is *Bryum bicolor*.

The *Barbula* group of mosses are not always easy to determine. They grow usually in a dense cushion and from above each shoot has a star-like appearance. *Barbula convoluta* is distinctive with narrow yellowish-green leaves, and a yellow seta and capsule. At the base of each seta, are sheathing bracts, which only *B. convoluta* has.

All the mosses described so far have been the acrocarpous, upright mosses, with short stems. The pleurocarpous are spreading mosses with frequent side branches. Probably the commonest of these are *Eurhynchiums* and *Brachytheciums*. Growing on damp walls, logs and stones, these are not easy to distinguish unless they have capsules. *Eurhynchium* capsules always have a long beak. Another important feature is whether or not the seta has tiny papillae, making it look rough. This can just be seen with a hand lens, but a low-powered microscope is better.

By the comparison of leaf size and the presence or absence of papillae on the seta, the various *Eurhynchiums* and *Brachytheciums* can be determined. These are the commonest found within Edinburgh.

<i>Eurhynchiums</i> have a beak.	<i>E. confertum</i> Smallest. Leaves up to 1 mm. Seta smooth.	<i>E. praelongium</i> Leaves 1-1.5 mm. Seta rough.	<i>E. striatum</i> Leaves 1-2 mm. Leaves taper abruptly. Seta smooth.
-------------------------------------	--	--	--

<i>Brachytheciums</i> have a short point. No beak.	<i>B. velutinum</i> Smallest. Leaves up to 1 mm. Seta rough.	<i>B. albicans</i> Leaves 1.5-2 mm. Smooth shoot. Smooth seta	<i>B. rutabulum</i> Leaves 1-2 mm. Seta rough.
--	---	--	--

An even smaller moss, looking very delicate, much branched and creeping is *Amblystegium serpens*. The capsules look very large relative to the size of the plant and are often the only conspicuous part. It grows on damp rocks and walls.

Finally, a moss growing in almost all habitats - on trees, or walls in shady damp places - *Hypnum cupressiforme*. This is a variable moss with several varieties, but the commonest is very regular in growth. It looks like a tiny prostrate conifer. The leaves all tend to curve downwards in a flattened arrangement, making smooth, dark, shiny green shoots.

For the precise identification of mosses it is necessary to use a microscope, although the commonest mosses are quite recognisable with a good hand lens. The Society has available for loan several microscopes which are ideal for identifying mosses. The only very readily available books are E.U. Watson's "British Mosses and Liverworts" (C.U.P. 1968) and "The Oxford Book of Flowerless Plants" (O.U.P. 1979).

H. McHaffie

DUTCH ELM DISEASE IN THE LOTHIAN 1980

The activity of *Scolytus scolytus*, the elm bark beetle which spreads the disease caused by the fungus *Ceratocystis ulmi*, is very much governed by temperature. On days when the summer temperature is above 62°F, the beetle becomes very active and disperses from its over-wintering breeding grounds in dead and dying elms, to feed on healthy elms. In so doing it spreads the fungal spores which they may have picked up from the breeding ground and this in turn will kill any infected elm.

If the number of breeding grounds is reduced the beetle population can be kept under a degree of control. This, as well as the safety aspect of felling dead and dying elms is a major reason for the strict action taken on disease infected trees in Edinburgh. The weather, however, has the upper hand in determining how active the beetles are and the success of their breeding cycle.

We had a mild winter last year which helped the over-wintering beetles and their young to survive. This was followed by a dry April and a hot May, perfect weather for encouraging the beetles to emerge and disperse. The result of this, in 1980, was a dramatic surge of disease outbreaks throughout the Lothians very early in the season, reaching a peak in mid-July that was greater than anything previously experienced. Indeed, at the mid-season point more trees had been condemned within the City than for the whole of 1979. That year, as you may remember, was cold and wet and not only discouraged beetle activity but in itself would have reduced their numbers.

However, the 1980 summer then became very broken, with a great deal of cold and wet weather, which fortunately checked the spread of the disease. At the time of writing it is suggested that the season will end with a similar number of trees condemned in Edinburgh, about 400, as in our worst season yet, 1978.

It is hoped that the disease can be controlled at this level in future years. With over 26,000 elms in the City the time when large gaps appear in the elm dominated landscapes may be a long way off. In the meantime, if those trees that are lost to the disease, are replaced by other species through schemes operated by the Regional and District Authorities, then the impact of the disease may be a great deal less than it has sadly been in other parts of Britain. The control campaign that has been operating in the Lothians since 1976, is the only way of making this possible. Without it, breeding grounds would have certainly been well established within the City, in places such as Corstorphine Hill, which perhaps would have made 1980 a year in which thousands of elms would have succumbed to the disease.

Such a prospect in terms of amenity, landscape and safety, is unthinkable and so with the help of the general public the campaign to manage this ecological problem is a very important one.

(Tel. 031-229 9292)

J.C. Sheldon
 Authorised Officer
 Dutch Elm Disease Control
 Lothian Region

SOWING TIME

Many of us have gardens and are accustomed to sowing the odd row of peas or planting out a border of annuals. Contrast this with a farmer sowing perhaps 400 acres of grain.

A quick inspection of almost any cereal crop will show that it is grown in rows. This is a fairly recent innovation, usually credited to Jethro Tull some 300 years ago. Prior to that, seed was broadcast by hand and broadcasting of seed, now by machine, is still resorted to in some circumstances. This may be due to lack of time, a shortage of labour or to soil conditions unsuited to the use of a seed drill.

Sowing in rows was initially to allow ground between the rows to be cultivated whilst the crop grew. This removed most of the weeds and resulted in better crops. Today chemical weed control is universal in our cereal crops and so this reason for drilling no longer applies. The advantages we now look for are evenness of plant distribution and regular depth of sowing. The ideal situation in a grain crop is for all plants to develop uniformly and to come to maturity at the same time. Towards this end row width has decreased since Tull's day and many modern grain drills sow 12 cm rows. Equipment is being developed which will place seed grains individually at pre-determined intervals along a row. The somewhat irregular shape and size of cereal grain makes this a problem not yet adequately solved by engineers as an acceptable machine will be expected to work at speeds similar to that of traditional drills. Otherwise delay in sowing would outweigh the advantage anticipated from precision sowing.

On a grain drill seed is carried in a hopper and fed to the tubes which carry it down to individual seed coulters. One common feed mechanism is a fluted roller which picks seed out of the hopper; in other machines centrifugal force is used to spin grain out to the various tubes. The coulter is the part which places seed into the soil and different types are used according to soil conditions. For hard soil or for wet soil a disc coulter gives best penetration. A vertical disc cuts a groove into the soil and seed is fed in behind it. For better conditions, usually in the spring, Suffolk coulters are used. They take the form of a shoe which makes a shallow furrow and deposits the seed. Modifications of this are tine and wing coulters which provide either more penetration or else distribute seed over a wider band.

Size of cereal seed varies from variety to variety and also according to season. The dry summer of 1976 resulted in generally small seed being available in 1977. Some cereal growers sow by seed number rather than by weight and this permits them to work to target numbers. Thus, instead of

sowing x kg per hectare he will aim to sow y seeds per square metre and will adjust the grain drill according to the average size of the seed being used.

The success of this depends on the quality of the seed. All seed sold has to have a germination test and the percentage germination has to exceed 85. Seed has to be certified and this involves inspection in the field and in the laboratory for presence of rogue plants of other varieties, of other cereals and of pernicious weeds such as wild oats. Only two generations of seed, from the plant breeders basic selection, are allowed in seed production.

Seed treatment with fungicides has been practised for many years now for control of diseases which are carried on the outer surface of the seed, e.g. barley leaf stripe (*Pyrenophora graminea*). More recently we see fungicide seed treatments being developed which provide protection to the ensuing plants for the first weeks of their life against some foliar diseases which are not seed transmitted, such as cereal mildew (*Erysiphe graminis*).

The increasing cost of energy has added impetus to a new farm seeding technique known as direct drilling. This involves the sowing of seed into the stubble of a previous crop with the omission of ploughing and other soil cultivations involved in making traditional seed beds. This involves a considerable saving in fuel. Herbicides are used to kill off weeds and volunteer crop plants and a direct drill cuts grooves and introduces seed into the soil. Such drills have to be heavy and strong as harvest traffic can leave a field surface in a compacted state and crop residues can obstruct the sowing mechanism. Where direct drilling has been used, the lack of soil disturbance has led to large increases in earthworm population. If direct drilling were to be practised for a number of years and if annual weeds were not allowed to set seed and add to the soil seed burden, the reservoir of weed seeds in the upper soil layer should become exhausted and future crops should be weed free. On the other hand perennial weeds, such as couch grass (*Agropyron repens*) thrive in undisturbed soil.

Grain drills can now be fitted with electronic devices which shut off appropriate coulters from time to time as sowing proceeds across a field. This results in blank rows appearing at regularly spaced intervals and these 'tramways' are used throughout the life of the crop for operating tractors carrying either fertiliser spreaders or crop protection sprayers. Crop damage is thus reduced and the chemicals and fertilisers are applied more precisely. So, if you see fields containing blank rows, do not assume that the tractor driver had been nodding off at sowing time.

W.D. Gill

Advertisement - ex bulb catalogue

SAXATILIS - T.825

A lovely species, flowering freely when established; the flowers, several of which are produced on each stem, are clear lilac with a bright yellow centre extending halfway up the petals, early May flowering. It should be planted in a sunny situation on the rookery.

Any Rook who would like the name and address of the supplier should write to the Journal Committee.

SOME NOTES ON TORRIDON DISTRICT

The northern shores of Loch Torridon are based on Lewisian Gneiss, the oldest rocks in Britain and almost certainly originally connected to Greenland, with a deep layer of sandstone superimposed. This has been denuded until all that is left are the spectacular terraced peaks of Ben Eighe (surmounted by a cap of white quartzite), Liathach and Ben Alligin, etc.

My brother occupies a former croft on the shore of the outer loch, with a few acres of grass and bracken covered sandy grazing land, surrounded by gneiss which has been ice-worn into hollows, mainly filled with peat or shallow water, with a thin layer of soil supporting Heather, Bog Myrtle, grass, etc. similar to that found all over the north-west. He has enclosed part of the grazing ground with walls and high fences and successfully raised fruit and vegetables. Attempts to grow trees have not succeeded except in the enclosed areas, owing to the damage by sheep and deer, but existing birches are growing rapidly. Near the house are a Pine and two Apple trees.

My brother and I wrote the following notes on the plants and animals of the area.

R.P. Frame

On the bare gneiss and sandstone of Torridon and on the boggy acid land there is the typical flora of Scottish hills. One distinction in the vegetation is due to the normal milder conditions than in, say, the Cairngorms, so that spring comes early - apple blossom has been as much as three weeks before that of the Borders. This year (1980) we have had strawberries in early June in our garden, sheltered from the north by high cliffs.

Passers-by have commented on the variety and size of the orchids, including the Greater Butterfly Orchid. One surprising plant growing in only small areas is Yellow Pimpernel which just survives from year to year. It is remarkable how such plants persist - natural selection would be expected to have favoured certain plants so that others would have disappeared.

Another oddity has been a white flowered Lousewort which has twice appeared in different positions. White Heathers (Ling, Bell Heather, and Cross-leaved Heath, but mostly Ling) grow freely on some shore rocks, up to a hundred plants in about an acre. Peat has a bleaching action on many plants including heather for 'white heather' appears under drying cut peats, but returns to its pink on exposure.

Some years the edible Field Mushrooms appear on the meadow land after a lot of rain followed by warm, sunny weather. A more regular species of fungus, found around birch trees, is one of the Boletus group, not one illustrated in the "Oxford Book of Flowerless Plants" but very pleasant to eat. Some years ago there was a good crop of Chanterelles in the woods around Torridon House.

Bracken is the main pest but persistent cutting reduces it to a minor problem in about three years. It makes good compost with seaweed. Only one Royal fern has been seen. When the pleasure yachts used to call into the Loch, we are told, this fern was potted and sold to the passengers.

By late August the hinds of Red Deer and their followers are down on to the meadow at dusk. We seldom see a stag until the rut is on, though in Alligin village stags in groups come down to the croft land regularly. In summer they all take to the tops - we can walk for miles and see no deer, yet we know that they are thereabout. Occasionally we see Roe Deer, but they are more regularly seen in the forest or woodland.

One year a cat bearing all the marks of a wild cat - ringed tail, flat ears - frequented the neighbourhood. It may have been a cross. After fishing one evening, we put a fish in the crab pot on the shore, meaning to put it out next morning, delaying that job until the midges were not so bad. In the morning the wild cat was in the pot! When the flap was opened it leapt out and disappeared. It was never seen again.

There are always a few dens of foxes in the cairns, some years doing great harm to the lambs. Once or twice we have encountered a big dog fox in the rocks, but like deer in summer they stay well hidden. Sometimes their smell lets us know that they have been around.

Last year the meadow was heaved up by moles - it was the year of the mole down on the Border hills also. This year there was not a sign of one. Hedgehogs, too, come and go. We had a family one year that came round from behind the house to the porch regularly at 9.30 each evening for a saucer of bread and milk, first the male then the mother, and finally a young one which climbed into the saucer to get its share. This went on for about a week and then they disappeared. As the next house is about two miles away over a rough sheep track, the comings and goings of these animals are mysterious.

One Pine Marten stalked a nest of Common Sandpipers for a day, judging by the persistent piping that went on. This was in broad daylight. Never have we in twenty years, seen more than one bat at any time, but one appears at dusk flying around the Pine tree with great regularity.

Of bird life, the most interesting has been a pair of Peregrine. These birds appear about March or April, make a great deal of noise and fuss for a time and then disappear. Only once did they raise a family, and the young birds watched us very conscientiously from a rocky perch on a number of days.

A Red-throated Diver rested a yard from one of the hill lochs, which it reached with a couple of ungainly flops. Two birds, not listed in the Torridon Guide, have been recorded: Goldcrests which have visited the pine tree, and a Tree Creeper which has been seen on its trunk.

Seabirds vary according to the availability of fish in the loch; one day there will be two hundred gulls, of various sorts and forty Shags on the point, the next day two or three gulls and a pair of Shags. Gannets come regularly and occasionally an Arctic Skua, which produces a panic amongst the other birds.

E.P. and J.C. Frame

SOME NOTES ON NATURAL HISTORY

The Common Violet (*Viola riviniana*) within the City

On 24 April 1980 I noticed five violet plants (*Viola riviniana*) growing in the pavement of Learmonth Avenue. They grew in the crack between the pavement and a low garden wall on both sides of a gate. They bore a total of ten flowers. By the next day there were twenty flowers.

A few days later I happened to see a lady in the garden, holding a watering can, and I asked her if she had noticed the violets. "Oh yes," she replied. "They're a perfect pest. They're coming up everywhere," and she indicated her garden which was glowing with aubretias of every shade. She invited me in to look at her garden. "I've done everything I can to get rid of them. I've put weed killer on them and I've pulled them out but they still keep coming up. Just look."

I looked, I was incredulous. The flower beds and gravel paths were covered with tiny violet seedlings, many, to judge by the size, only one year old. The tiny plants whose leaves were delicately uncurling like green scrolls had as yet no flowers, but other larger plants, two years old perhaps, had several each. Some of the largest plants were substantial clumps and a mass of blooms. Amazed, I realised that several patches of purple I had seen from the pavement were not aubretia after all. They were violets. It's true there was aubretia there in abundance - I suppose the eye sees what it expects to see!

The lady told me she had lived there for fifteen years and had always been a keen gardener. There had been no trace of violets at all until three or four years ago when the garden had suddenly been invaded, on both sides of the front path. Curiously the violets do not grow in any of the adjacent gardens, much to the regret of one neighbour. Also surprisingly the garden has an open exposure where it gets the full glare of the south west sun - certainly not the traditional damp woodland shade associated with violets.

By the last week in September the violets had produced seed capsules, some not yet fully ripe, others already split open into three sections. (These seeds are produced by cleistogamic flowers, not the open flowers of April.)

I would be very interested to hear any explanation of this strange yet delightful invasion.

H. Thom

Note: Cleistogamic flowers are flowers which never open and are self-pollinated.

Chicory (*Cichorium intybus*)

While walking along the coast on the 26 September in the area between Leckmoram Ness and Canty Bay near North Berwick, I saw a number of Chicory (*Cichorium intybus*) plants in bloom. They were growing along a path leading down to the sea from the A198 road where this runs close to the sea.

I went back again on 5 October and they were still blooming despite the wind and the rain. I counted some 20 plants in bloom down the little path.

On returning home I looked up the plant in the "Field-Club Flora of the Lothians" published in 1934 and Chicory is mentioned as growing at Aberlady, Haddington, Seton Mains, Portobello, Comiston, Slateford, Hailes, South Queensferry but not at North Berwick. However, I would think the plant must have been long established in the North Berwick area and so perhaps there are subsequent recordings of it.

M. Wood

A Starling with initiative

On Monday, 5 May 1980 there was no refuse collection in Edinburgh, and when our neighbour put his bag of rubbish out on the pavement it remained there all day.

About half-past-ten in the morning I noticed a starling standing on the white polythene bag, repeatedly stabbing it with his beak. He continued this for some minutes and was clearly eating something out of the bag. Although he had difficulty keeping a foothold on the taut slippery surface, he worked away industriously making numerous holes. About an hour later a second starling joined him. He tolerated the presence of the newcomer but when three others tried to join in he chased them away. From time to time one of the other starlings would succeed in gaining a place on the bag, but all the others appeared to take food out of the existing holes and not to peck holes for themselves. Most of the time they contented themselves with gleaning scraps splashed out on to the pavement by the original bird.

When I had the chance to examine the bag I counted some forty holes in the upper surface.

After a couple of hours the starlings went away, but by lunch time I noticed several fluttering round a rubbish bag in adjacent Comely Bank Avenue. Our neighbour meanwhile put his torn rubbish bag in a stout cardboard box which he sealed with sticky tape.

About six o'clock in the evening my husband called me through to look at the starling perched on top of the cardboard box. It was pecking it hopefully, but after a couple of minutes the bird admitted defeat and flew away.

Two days later I saw a starling make a single bore into our own rubbish bag, but he struck the outside of a packet that was of no interest. Then he turned his attention to another neighbour's bag made of tougher black polythene, and he managed to puncture this too. He was soon joined by a couple of other starlings and a few sparrows who pecked up what he splashed on the pavement. As far as I could make out it was only one particular starling who took the initiative and made the holes.

I was interested to see that the starlings had learned that rubbish bags are a potential food source. Sparrows have learned to hang upside down and peck peanuts from a net bag in the manner traditionally associated with tits. I have the impression that some birds are surprisingly adaptable when it comes to finding new ways of obtaining food.

H. Thom

A Stoat's haul

On a June visit to the Hirsell, a friend and I returned by the leet on the path we had walked not five minutes earlier. A dead rabbit lay on it where there had been no rabbit before. My friend got a glimpse of a Stoat which disappeared as we approached. Stopping, we retreated several paces and waited. The stoat appeared, and came on towards the rabbit, hesitated and ran back. We walked backwards a little further. This time the stoat got a hold at the neck, and dragged it for a yard or two. Then it let go, and taking hold again, seemed almost to lift the large, if not quite adult, rabbit for a foot or two further, before it dragged it off the path, where only moving grasses showed its passage. Both of us commented on the slowness of the stoat in comparison with the bulky rabbit. A "Field Guide to the Mammals of Britain and Europe" states that females are, on average, somewhat smaller than males. We wonder how far it had brought the rabbit, as we would surely have heard the squeals had it been killed *there*.

E.R. Landells

Reference

Van Den Brink, F.H. "A Field Guide to the Mammals of Britain and Europe". pub. Collins.

Earth Star fungus

In the 1979 Journal, page 36, it was reported that four fruiting bodies of the Earth Star fungus had been seen at a site, near the River Tyne, at East Linton.

Specimens re-appeared this year and one was passed to the Royal Botanic Garden herbarium for preservation and reference. Roy Watling confirmed the species as *Geastrum triplex*. When inspected the rays had not yet split open. The characteristic shape similar to a tulip bulb was noted.

R. Weatherhead

Soapwort and Lord-and-Ladies

In last year's Journal (see page 47) I asked if Soapwort was used as a soap.

The Roman historian, Pliny, refers to a substance called STRUTHION for washing and softening fabrics. Struthion was the classical name for a Soapwort, now known as *Saponaria officinalis*. Weavers stiffened threads by using starch to coat warp threads and when the woven cloth was complete they washed it out with Soapwort.

There is a bonus for gardeners here. Soapwort is toxic to lower forms of life and is a fungicide. This leads to another question, "Was the starch used then extracted from Lords-and-Ladies or Wild Arum (*Arum maculatum*)?" The root of the Arum contains a considerable quantity of starch and was at one time the chief source of that necessary domestic article. This starch was also the basis of a celebrated French cosmetic, 'Cyprus Powder' and a vaunted gout powder.

J. Carlyle

References

- Weaver, K.F. The Mystery of the Shroud. (An article in the Journal of the National Geographic Society, U.S.A.)
 Corke, H.E. and Nuttall, G.C. Wild Flowers as they grow.

OBSERVATIONS MADE BY MEMBERS DURING 1980

4. 4.80 A herd of Feral Goats, about 17 in number, was seen on the cliffs near Largybaan Farm in South Kintyre. Caves near the shore were used by them for shelter. Map reference NR 593141 (S.L.)
 Note: According to Whitehead, goats have been present on the Mull of Kintyre for many years, being first mentioned in 1772. They are usually seen around Rubha Duin Bhain and Earadale. They probably roam most of the coast between Carskey Bay and Machrihanish and are known to use the caves for winter shelter.(E.F.) (Whitehead, G.K. "Wild Goats of Great Britain and Ireland", 1972.)
20. 4.80 Dead Badger cub found at 1909 feet on Meall an Fhireain (map reference NM 152890) at the west end of Loch Arkaig. No sign of injury. Sett probably in the gully of the Alt Choir Chaisil burn which runs down the ridge to Glen Pean. (W.G.)
9. 5.80 Jay (*Garrulus glandarius*) flew across the B924 into the Dalmeny estate. (C.P.R.)
24. 5.80 At Hopes Reservoir on the E.N.H.S. outing, groups of Blue (Mountain) Hares were seen, three or five or eight, running on the heathery hillside and mixing together, playing about, not scared. Good dark brown colour but still with some white underparts and back legs. (H.M.)
25. 5.80 Merlin with prey - Coldingham Moor. (R.W.)
11. 6.80 While on holiday in the north-west Highlands, a member saw a Black-backed Gull struggling with a Sea Trout. The water in the famous river was very low indeed and while our member descended the bank the gull flew off. Our member was left to retrieve the fish, which is now in a deep freeze in Edinburgh. (C.S.)
22. 6.80 Pseudoscorpion (*Cheridium museorum*) inside house - St. Abbs. (R.W.)
28. 6.80 Iron Prominent Moth (*Notodonta dromedarius*) - Gosford.
 Swan Mussel (*Anodonta cygnea*) - Gosford. (R.W.)
 Note: This is a freshwater mussel which may reach a length of six inches.
2. 7.80 While on holiday in Sutherland, a lobster fisherman pointed out to us a dead fully grown Otter lying at the side of the Rhiconich to Kinlochbervie Road (B801). It had been killed by a car a week earlier. (C.A.P. and E.M.P.)
10. 7.80 Worn shell of Sting Winkle (*Ocenebra* [*Murex*] *erinacea*) picked up at Belhaven (thought to be extinct locally). (R.W.)
 Note: Sting Winkle is a pest on oyster beds. It was almost exterminated along the east coast by the cold winters of 1939-40 and 1946-47, but is now returning. ("Pocket Guide to the Sea-shore", Collins.)

14. 7.80 The Oyster Plant (*Mertensia maritima*), seen growing in profusion on the shore between Keil Hotel and Keil Point near Southend, Kintyre. (S.L.)
16. 7.80 Birds seen on E.N.H.S evening at Musselburgh Lagoons:
Waders - two Common Sandpiper at lagoon edge, on autumn passage; and beyond the lagoon wall Bar-tailed Godwits still showing signs of summer plumage; Curlew; Redshank; Oyster Catcher; Dunlin; Ringed Plover; Golden Plover; Turnstone.
Whooper Swan - a single bird at the mouth of the River Esk, oversummering.
Wheatear on path, between second and third lagoon.
Shelduck - two families of young on the open water of the first lagoon.
Common, Arctic and Sandwich Terns on the open water of the first lagoon and beyond lagoon wall. (C.A.P.)
19. 7.80 Several Yellow Underwing moths seen on ground in Bolton Muir Wood (four seen together at one point), all in a torpid state, possibly due to cold conditions, until disturbed. (C.A.P.)
25. 7.80 Dolichopodid fly attacking Nematode observed while out with Mike Nelson of the Nature Conservancy at Sheeppath Glen. This prey said not to be recorded in literature. (R.W.)
9. 8.80 On E.N.H.S. outing to Aberlady, party of six Greenshank in flight and calling, by Timber Bridge, finally settling on sand bank within sight of bridge. (C.A.P.)
16. 8.80 Fungus, *Amanita crocea* seen at Balerno near the Red Moss. (E.F.)
2. 9.80 About 20 Silver Y moths (*Plusia gamma*) in garden, Dunbar. (R.W.)
24. 9.80 Common Buzzard mobbed by crows over house, Dunbar. (R.W.)
25. 9.80 Common Buzzard seen about a mile-and-a-half south of Mid Calder, flying slowly westwards: weather sunny, wind 4 on the Beaufort Scale. (C.P.R.)
28. 9.80 Fungus, *Craterellus cornucopioides* (Horn of Plenty) in Saltoun Big Wood. (R.W.)
- 4.10.80 Peregrine (*Falco peregrinus*) seen hunting over Auchencorth Moss (near Penicuik, NT 2056) in good light; bird flying judged to be adult female. (C.P.R.)
- 4.12.80 In Charlotte Square, Edinburgh, under the trees, a large ring of mushrooms, 63 caps counted. Caps rather decayed, but either Blewits (*Lepista saevum*) or Wood Blewits (*Lepista nudum*). (E.F.)

Some observations in 1980 at Hopetoun from C.P.R.

21. 7.80 Common Yellow moth (*Triphaena pronuba*) seen, and again on later dates, latest being 3.10.80, when three were very active on and about Yew foliage.
8. 9.80 Three Arctic Skua (*Stercorarius parasiticus*) were seen pirating Sandwich Tern (*Sterna sandvicensis*) in the Forth opposite Hopetoun.

- 3.10.80 Fly Agaric (*Amanita muscaria*) recorded, our first.
Taxus baccata fructu-luteo, a Yew which bears bright yellow berries discovered.

Breeding records of birds included:

- | | | |
|----------|---|-------------|
| 8. 6.80 | Shelduck (<i>Tadorna tadorna</i>) | 6 juveniles |
| 10. 6.80 | Woodcock (<i>Scolopax rusticola</i>)
Treecreeper (<i>Certhia familiaris</i>) | 2 juveniles |
| 26. 7.80 | Partridge (<i>Perdix perdix</i>) | 9 juveniles |

EXCURSIONS - 1980

Key for excursions:

<i>B</i> - botany	<i>E</i> - entomology	<i>IBC</i> - island bird counts
<i>O</i> - ornithology	<i>Ff</i> - freshwater fauna	<i>f</i> - fungi
<i>G</i> - general	<i>S</i> - shore	<i>Ge</i> - geology

Day excursions and weekends

Leader

27 Jan	Colinton & Torduff Reservoir with Scottish Wildlife Trust	OG	Mr. W. Clunie
23 Feb	Eddleston Circular Walk	G	Miss F. Howie
22 Mar	Tynninghame	OG	Mrs. M. Wood
26 Apr	Oatridge Farm	G	Mr. D. Rose
3 May	Garleton Hills	G	Mrs. C. Stewart
10 May	Vogrie estate	G	Miss S. Mustard
16-19 May	Jedburgh Weekend		
24 May	Hopes Reservoir	G	Mrs. H. Miller
31 May	St. Abbs	OG	Mr. G. Evans
7 Jun	Edin's Hall Broch	G	Mr. A. Smith
14 Jun	Loch of the Lowes & local walk	O	Mr. M. Drummond
14 Jun	Lamb & Fidra	IBC O	Mr. R.W.J. Smith
21 Jun	Glenfarg	B	Dr. R. Begg
21 Jun	Craigleith	IBC O	Mr. R.W.J. Smith
28 Jun	Teviot Water	EG	Mr. A. Buckham
5-6 Jul	St. Cyrus Weekend	B	Mr. D. Carstairs
12 Jul	Portmore estate	G	Mr. S. Clarke
19 Jul	Garvald area with Scottish Wildlife Trust	B	Mrs. H.J. Younger
26 Jul	Saltoun Woods	G	Mrs. C. Stewart
2 Aug	Almondell (moths & barbecue)	E	Miss M. Konik
9 Aug	Aberlady	O	Mr. C. Pountain
23 Aug	Craik Forest	G	Mrs. V. McFarland

30 Aug	Tynninghame	S	Mr. D. Jones
6 Sep	East & West Lomond with Dundee Naturalists Society	G	Mr. McNicoll
12-15 Sep	Blair Atholl Weekend		
20 Sep	Whim Wood	G	Miss B. Gordon
27 Sep	Hopetoun estate with Botanical Society of Edinburgh	f	Mr. M. Richardson
4 Oct	Pentland Hill tops	G	Mr. W. Clunie
1-2 Nov	Galloway Weekend	O	
6 Dec	Musselburgh Lagoons	O	Mr. C. Pountain
27 Dec	Gullane (coastal walk & sausage sizzle)		

Evening excursions

7 May	Bawsinch	G	Mr. C. McLean
14 May	Veitch's Nursery, Juniper Green	B	Mr. R. Veitch
21 May	Corstorphine Hill	G	Mrs. E. Farquharson
28 May	Water of Leith	G	Mr. C.P. Rawcliffe
4 Jun	Dalkeith Palace grounds (birdsong)	O	Mrs. E. Hamilton
11 Jun	Cramond shore & Island	G	Mr. K. Sanderson
18 Jun	Dalmahoy area	B	Miss J. Raeburn
25 Jun	Riccarton estate	G	Mrs. E. Farquharson
2 Jul	Balerno area	B	Miss J. Raeburn
9 Jul	Bonaly	G	Mrs. S. Gray
16 Jul	Musselburgh Lagoons	O	Mr. C. Pountain
23 Jul	Union Canal	Ff	Mrs. E.M. Smith Mrs. E. Gillespie
30 Jul	Holyrood Park	Ge	Mr. G. Bell
6 Aug	Flotterstone	G	Mrs. S. Gray

The Kingfisher, - Will I ever see one?

He lives near the water, feeds on fish
 Just to espy him is my naturalist wish
 He has brilliant plumage, and a long pointed beak
 But he seems to hide when I go to seek!
 I've sought him high, I've sought him low
 I think when he hears me, he decides to go.
 He's sometimes known as the Halcyon
 Will he, like the Dodo disappear and be gone?

REPORTS AND EXTRACTS FROM REPORTS

Visit to Oatridge Agricultural College - 26 April 1980

Members spent a most enjoyable day visiting Oatridge College and Farm situated between Uphall and Linlithgow. The farm director - Mr. David Rose - was our leader.

We commenced our visit at the College Laboratory where we inspected owl pellets showing bones of Bank Vole, Short-tailed Vole and Wood Mouse. We also examined a dead Fox and dead Badger and were shown parasites taken from the badger earlier in the day. From the farming point of view we found of particular interest the exhibit of the bullock's liver clearly showing Liver fluke (*Fasciola hepatica*).

We then walked across fields towards the farm buildings. In one field we had a close look at the College's nine rams - five Suffolk, two Dorset Down, and two Blue-faced Leicesters.

In an adjoining field were the beef cattle with their calves. Here David Rose pointed out where the quarry, which had produced the building stone for the Scott Monument, had been. It is now completely covered in grass.

In the next field we were shown Grey-faced ewes, the majority with twin lambs. This field was made up of a combination of Rye-grass and White Clover with some Timothy. The adjoining field was of young barley and we were told of the seven-year rotation of three years barley followed by four years grass.

We had a picnic lunch in the sunshine beside the Binny Mausoleum and then proceeded to the farm where we were taken through the sheep pens, cattle and pig sheds in great detail by our leader.

As we walked back from the farm to the College car park we all agreed it had been a memorable day.

C. Pountain

Outing to Vogrie - 10 May 1980

At the time of local government re-organisation, Midlothian District Council became the owners of Vogrie House and Estate near Pathhead. The house in its 100-year history has served as a hospital for the mentally handicapped, headquarters for the Police, and has housed the Civil Defence. Designed by Andrew Heiton for James Dewar, only the stables were finished at the time of Dewar's death. The son and heir was killed on active service, and the farms were sold off, and the house and grounds passed into other hands.

On 10 May in perfect weather the Society visited the house and grounds and the Ranger, Miss Sue Mustard, spent the day with us, not only showing us points of natural history interest but also filling in the historical background and outlining the plans for the future.

After a brief look at a map of the estate indoors, we started at the immense walled garden which is now being used as a tree nursery where many hundreds of trees and shrubs are being raised for the district. Work has

started on the repair of the hothouses, once heated by coal furnaces with flues carrying the heat through the walls. Outside the walled garden on the south side where the orchard used to be new fruit trees have been planted against the walls.

With grants from the Countryside Commission covering 75 per cent of the costs it has been possible to start on the restoration of the grounds to their former state. The Rhododendron Walk which had become choked with overgrown shrubs has been cleared and replanted; dense Willow scrub by the curling pond has been removed and drainage improved; and in the Parkland surrounding the house where many fine specimen trees were planted at the end of last century, recent plantings have been made. It is anticipated that in fifteen to twenty years there will be an Arboretum of considerable interest.

A walk through the house completed the morning's activities. A commentary on its future use by Miss Mustard left everyone with the hope that the far-sighted plans for accommodation, conference facilities and educational opportunities for groups would not have to wait too long to be realised.

After lunch in the sunshine we walked by the beech avenue and saw a forestry plot where growth success of various conifers is being monitored. We crossed a burn and walked along a slope popular with Fox and Badger, then followed the River Tyne to the north end of the estate. On the way a young Eel was spotted in the river and an Orange Tip Butterfly was seen. A conifer wood on our route has been used for many years by red squirrels.

Our path back followed the boundary wall and crossed the Vogrie Burn and came to a pond which had been excavated last autumn. The source of water to the pond is causing problems as yet unsolved, for it has run from under the nearby Blinkbonny mine, is bright rust coloured when it comes to the surface and is depositing an iron sludge in the new pond.

From the pond it was only a short distance back to the house. Miss Mustard had given us a very full and interesting day but no-one was in any hurry to leave the beautiful surroundings of stately trees coming into leaf, early Rhododendrons flowering, Daffodils massed in the grass, and birdsong everywhere.

E. Farquharson

Jedburgh weekend - 16-19 May

Twenty-two members of the Society enjoyed the May weekend with Jedburgh as a base for outings. This was a 'do-it-yourself' weekend with no organised leaders, members following their own chosen interests.

On Saturday all assembled at Tow Ford (where Dere Street crosses the Kale Water). Some of the party remained in the valley and here they saw Sedge Warbler, Meadow Pipit, Whinchat, Common Sandpiper, Curlew and Lapwing. The remainder of the party first climbed up to the Fort at Woden Law then continued along Dere Street until the Pennine Way was reached and until they could look down on the earthworks of Chew Green. On the return journey a few of the Hindhope head of wild goats were spotted at a distance and at Streethouse a Grasshopper Warbler, a Song Thrush and a Curlew's nest (with three eggs) and also a Red Squirrel were seen.

On Sunday a few of the party walked along Dere Street, north of Jedburgh (saw Wheatears), and the remainder of the party started at Hownam (saw Whitethroat) and followed the Heathenhope Burn up to Heathenhope Reservoir (heard Ring-ouzel and saw Dipper), continued on the path until they reached the Pennine Way and Russell's Cairn, returning by 'The Street', not forgetting to look at Hownam Rings and Hownam Fort.

The meeting place on Monday was Primside Mill. Some of the party remained in the Bowmont Valley and here they saw Swifts, Grey Wagtail, Pied Wagtail, Swallow, Sand Martin, Heron and a family of young rooks.

A list of the flora seen during the weekend is lodged with the Records Secretary.

B. Gordon

Outing along the Water of Leith from Bell's Brae - 28 May 1980

On Wednesday, 28 May a party of 20 E.N.H.S. members met at 18.30 hours at the foot of Bell's Brae to walk down the Water of Leith to Stockbridge; and for some, to walk back.

It was a damp, somewhat dismal evening as far as weather was concerned, but for those who ventured it proved an enjoyable one-and-a-half hours. We were taken first to where the dam below the bridge creates a miniature Niagara, a spot unknown to most of the company. We went under the Dean Bridge, finished in 1852, passed St. George's Well, St. Bernard's Well and so to Stockbridge.

Birds were few in number but of 16 logged two were of particular interest, Common Sandpiper and Grey Wagtail.

No plants of outstanding interest were seen but we examined a good specimen of a hybrid Black Poplar and noticed the disappearance of the Fig that once grew in the wall.

C.P. Rawcliffe

Outing to Edins Hall Broch - 7 June 1980

The company noted Dipper and Grey Wagtail and Sandpiper by the River Whiteadder, and the variety of flowers. Green Alkanet (*Pentaglottis sempervirens*), Leopard's-bane (*Doronicum pardalianches*), and Wood Cranesbill (*Geranium sylvaticum*) were prominent. The colony of Meadow Saxifrage (*Saxifraga granulata*) growing on shallow soil upon rocks, had suffered with the drought and only a few poor flowers were on view.

Blackcaps were singing and Sedge Warbler, Wood Warbler, Redstart and Spotted Flycatcher could be heard from the oaks.

The walk to the broch was uneventful, but the arrival there brought expressions of amazement at the size of the structure, and the area of the surrounding earthworks. It stands at the foot of Cockburn Law on a bank about 200 feet above the river. The structure is about 90 feet in diameter,

with an inside diameter of 55 feet. Within the walls are chambers with well constructed steps to a higher level, which is believed to have reached 40 feet in height, although now only 7 feet remains. The dry stone work is superb, still in excellent condition after perhaps 2000 years, and some stones of great size. A lintel stone is estimated to weigh three tons. The entrance is four feet, four inches wide, guarded by a small chamber on either side.

It is not known who built such structures, but there are two others in the Borders, at Torwoodlee and Bow Broch, near Galashiels. The best examples are in Shetland.

On our return, slight rain threatened, and we remarked upon groups of the large black fly *Mesembrina meridiana* which collected upon stones, when the sun was obscured.

The tunnel and shaft of an eighteenth century copper mine opposite Elba cottage was then examined by torchlight. The entrance is cut cleanly into the solid rock, and the shaft falls suddenly without warning - a dangerous place.

This concluded the conducted outing, but members remained to explore the surrounding woodland.

A.J. Smith

Outing to the Loch of the Lowes, a Scottish Wildlife Trust Reserve - 14 June 1980

The run to Dunkeld did not seem very promising weatherwise with misty, grey and chilly conditions, yet we were all day on the right side of the rain belt. Even the walkers reached shelter at Dowally before the deluge began.

After an introduction from Maurice Drummond, Ranger Naturalist, we broke into small groups, some to see the Ospreys, others to start their botanising in the meadow and hedgerows round the car park. The Ospreys with one, possibly two, chicks a week or less old, were for some time together at the nest: an adult standing on either side, one feeding a chick. There are five pairs of Great Crested Grebe on the Loch this year, and a single Common Tern was seen over the water. Tree Creepers have nested behind corner posts in the lower hide for seven consecutive years, and this year there were two pairs. The young birds could be seen moving in the nest at the left corner.

After lunch the party divided into two: a local, largely botanising, group, and those who opted for a walk led by Mrs. Sheila Gray. The first mile along the road soon showed up stragglers, but the whole five miles were so beguiling that the writer and a few others never really caught up - or tried to! A party of Long-tailed Tits and a singing Blackcap were worth a delay, and time was needed to sweep the verges for insect life. Over the shoulder of the hill there was a stop to look at Whinchats with a fledged young bird, and a Whitethroat song-flighting. The first of the three lochans, Mill Dam, had a colony of Black-headed Gulls clamouring over the reed bed, while the second had a less noisy fifteen to twenty pairs of Common Gulls. One aggressive adult dived at me tern-wise, and looking across the water I could see at least two downy young on the rock slabs.

Between the two lochs there was Common Butterwort in flower, as well as the lovely Chickweed Wintergreen (*Trientalis europaea*) and two spikes of a carmine orchid with unspotted leaves and slender spur. It was thought to be the Fragrant Orchid.

Going down a grassy track to Dowally, two ferns, Oak and Lemon-scented, were observed. Then while sheltering at Dowally we were entertained by a local resident who showed us a Pied Wagtail's nest in a rose bush on his wall and told us about a Muntjac deer which he had reared as an orphan.

The walk was much enjoyed, the laggards only wishing that more time could have been given to it.

E.R. Landells

Insects seen at Loch of the Lowes Nature Reserve - 14 June 1980

In spite of unfavourable conditions, the Loch of the Lowes and surrounding area proved to be rich in observable insect life.

A grassy area near the reserve's car park yielded some pretty butterflies and moths. What was probably a Pearl-bordered Fritillary (*Clossiana euphrosyne*) was admired. The main foodplant of this butterfly is Dog Violet, as in many Fritillaries. A specimen of the Clouded Border Moth (*Lomaspilus marginata*), which feeds on willow species, was seen at rest on *Salix aurita*. Two other common moths were the Yellow Shell (*Euphyia bilineata*) and the Silver-ground Carpet (*Xanthorhoe montanata*), both of which have their larvae on a variety of low-growing plants.

Other insects seen on the reserve included Damselflies, *Chrysopa ventralis* Curtis (one of the green lacewings), many soldier beetles (Cantharidae) which are conspicuously coloured either black or brownish with red markings and are predatory on other insects, *Judolia sexmaculata* (L.) (a longhorn beetle, the larva of which bores in wood) and several species of sawflies, all but one of which are recorded as fairly common and widely distributed. The exception is *Profenusa pygmaea* (Klug), a small mostly black insect whose larva lives in a blotch mine between the upper and lower epidermis of an oak leaf. Previously it was recorded as far north as the Forth/Clyde line and also in Aberdeenshire. A full list of the sawflies found on the reserve is with the Records Secretary.

Later, our party split into two groups and some more interesting insects were seen as we walked to the village of Dowally. Two large female specimens of an oil beetle, *Meloe violaceus*, were found crawling across footpaths. These beetles with their swollen abdomen, very short wing cases and slow, ungainly walk (they cannot fly), tend to be regarded as faintly unpleasant by most people. They have a very interesting life-history, however. The eggs are laid in the soil. When the larva hatches, it climbs up to a flower head and awaits the arrival of a solitary bee. It then attaches itself to the bee's hair and is carried back to the bee's burrow, where it first eats the egg and then develops on the nectar and pollen that the bee has stored for its own larva.

On some young spruce trees the galls of conifer gall-lice were seen. These are formed by an interesting, though destructive, group of aphids.

Several apt names have been given to their galls, including 'pseudocone' and 'pineapple gall'. In *Adelges abietis* Ratzeburg, the species that we saw, the gall starts to form when 60-100 eggs, laid in a batch, produce young aphids which move to the bases of the new spruce needles. Their feeding irritates the plant's tissues and the insects are soon enclosed in a smooth-surfaced, tubular swelling at the shoot's base. This grows, passing from greenish to brownish with a red phase in between. Eventually it dries and hardens. At this stage the individual chambers of the gall, each containing an aphid, open up to give the mature gall its cone-like appearance. *A. abietis* is confined entirely to spruce, but in other closely related species, generations of gall making insects on spruce alternate with free-living, bark dwelling generations on a secondary host, which is frequently larch.

A Speckled Yellow moth (*Pseudopanthera macularia*) was found. This is a woodland species, not common in Scotland, whose larva feeds on wood sage, woundwort and dead nettle. It has a bold colour pattern of large black markings on a bright yellow background.

A.D. Liston

A tribute to a teacher

Two things on the outing to the Loch of the Lowes reminded me of a teacher affectionately known by her initials.

Maurice Drummond in his preliminary talk told us of a present day class of children who did not know a Rowan tree inflorescence from a Cauliflower, and my thoughts returned to nature lessons from H.B.G. We were 'directed' to illustrate our notes in water colours, without a line of pencil, following outings to Roslin or Aberlady. In the summer holidays she started a nature competition. There was usually a project set, e.g.

Make a study of all creatures that fly.

Make a collection of pressed wild flowers.

and when I was 14 years old:

Make a study of the correspondence between plants (or animals),
and the condition of life in their natural homes.

Make a study of any plants which do not bear flowers.

But these were rather suggestions, and the important point was to do something and give it in at the start of the next session.

The second reminder of these competitions was when we found the first flowers of Chickweed Wintergreen up on the hill. Latin names never come very readily to me, except for *Trientalis europaea*, and that I can date exactly from the first I ever found, and painted on 15 August 1927. I had not named it but described it in great detail (18 lines), starting, "On a high grassy knoll, over 1000 feet above sea level". H.B.G. had written 'Trientalis' beside the account and painting, and it has remained a favourite ever since.

E.D. Landells

Outing to Glenfarg - 21 June 1980

Sixteen members of the Society met on 21 June at Lochelbank Farm by Glenfarg, and crossed the hills to West Dron on 'Wallace's Road' - so called because William Wallace took this route with his guerilla band when he was skirmishing with King Edward I between the Forth and the Tay. The way has also been praised for its splendid views by Sir Walter Scott and the Daily Record. The weather being cloudy but dry and very clear, we were able to join these distinguished witnesses in appreciating the Lomonds and Bishop Hill southwards, the length of the Tay as far as the two bridges and Dundee to the east, while the Earn valley villages were below and almost the whole width of the Grampians in front.

Starting at the farm with arable weeds, such as the small Bugloss (*Lycopsis arvensis*) and Sun Spurge (*Euphorbia helioscopia*), the path lay across heavily cropped pasture, bypassing an indolent Charolais bull, to the marshy headwater of a small stream. Here was a good stand of the rare Hairy Stonecrop (*Sedum villosum*) and a number of other wetland plants - Brooklime (*Veronica beccabunga*), Marsh Bedstraw (*Galium palustre*), Bog Stitchwort (*Stellaria alsine*), Ivy-leaved Crowfoot (*Ranunculus hederacea*), Lesser Spearwort (*Ranunculus flammula*), Water Forget-me-not (*Myosotis scorpioides*), Large Bittercress (*Cardamine amara*), and Bottle Sedge (*Carex rostrata*). Lunch was taken on the slopes of Dron Hill with its outcrops of volcanic rock, before descending through trees to West Dron, where we passed a nasty line of dead foxes and rats impaled on a fence. Along the lane at the bottom were hedgerow plants - Downy Rose (*Rosa villosa*) and Dog Rose (*Rosa canina*) in profusion, Wood Avens or Herb Bennet (*Geum urbanum*), Water Avens (*Geum rivale*), Tufted Vetch (*Vicia cracca*) and Meadow Vetchling (*Lathyrus pratensis*). The last lap was a stiff and rabbit-ridden climb back to the farm via Lustylaw, passed a fine collection of young calves of various hues and another bull. Birds sighted en route included Lapwing, Mallard, Swallow, Swift, Greenfinch, Collared Dove and Common Snipe. A Stoat scuttled away as we prepared to drive home.

R. Begg

Outing to Teviot Water - 28 June

On Saturday, 28 June members visited the banks of the River Teviot under the leadership of Mr. Andrew Buckham.

Starting at Kalemouth we walked for the first mile along a quiet country road with hedgerow and road verges full of colour. Between the road and riverbank were huge stands - huge in height and in area - of the Giant Hogweed (*Heracleum mantegazzianum*) in full bloom. It was a most impressive sight. Jack-by-the-hedge or Garlic Mustard (*Alliaria petiolata*) was growing by the roadside and we were shown the caterpillars of the Orange-tip butterfly feeding on the plants.

At the now disused station of Kirkbank we joined the old railway line. Vegetation was dense and colourful but scrub is taking over in many parts. Bramble and bramble hybrids, Dog and Downy roses were much in evidence. Several different moths were seen (Yellow Shell moth, Chevron moth) and a brilliantly coloured ground beetle in metallic hues (*Agonum dorsale*). A badger sett, at present deserted, was in a patch of woodland adjoining the railway line.

Before stopping for lunch we left the railway line and rejoined the river. Clumps of yellow irises were in flower along the water's edge, and beside the pathway we watched a colony of mining bees (*Halictus rubicundus*) entering and leaving their holes in an eroded bank.

As we passed through the village of Roxburgh, Mr. Buckham showed us a road verge where hops are usually seen growing - a reminder of the days when monks in the area brewed their own beer. From Roxburgh we again returned to the river and for a short distance followed a difficult and worn path before levelling out again onto easier ground.

The end of our walk into Kelso was enlivened by passing the grounds of a large Dog Show where every parked car and caravan had its quota of canine aristocrats.

Our thanks go to Mr. Buckham for introducing us to a new walk and for spending a Saturday with us, showing us so much of interest.

E. Farquharson

Meeting at St. Cyrus National Nature Reserve - 5 July 1980

It was a perfect summer day on Saturday, 5 July - blue skies reflected in blue sea, red rock contrasting with yellow sands, and green grass dotted with many flowers. Thirteen members of the Natural History Society arrived at the St. Cyrus National Nature Reserve and were welcomed by the Warden, Mr. David Carstairs, to whom we are very much indebted for spending so much of his time in showing us round.

Although this coastal Reserve is small - a strip of land only three miles long by about half-a-mile wide - the Nature Conservancy recognised its unique botanical interest as far back as 1962, when a Reserve agreement was made with the owning salmon fishery companies. These interests still operate in the area and, as we walked through the dunes and along the shore, we could see the fishermen's huts, and the rows of poles running out to sea supporting the salmon nets.

Mr. Carstairs explained that the great diversity of plant and other natural history interest on the Reserve is due to its rather unusual situation. It is bounded by high cliffs and grassy cliff slopes to the west, and by the high water mark on the east; but between these limits there is a flatter area, once a raised beach but now dune pastures with a slightly alkaline soil, whilst towards the sea lie the dunes proper, both fixed and mobile, with differing flora on each side. At the south end of the Reserve, there is an area of saltings following the former course of the North Esk River, and there are also tidal sand flats on the present river banks. The climate is comparatively mild for the east of Scotland, and most of the Reserve area is sheltered by the cliffs on the one hand and by the dunes on the other.

Visitor pressure has caused problems of litter and also of soil erosion, which we could see was being avoided to some extent by channelling walkers on board walks away from vulnerable areas; and, during the summer, a special barrier is erected to keep them away from the important breeding colony of Little Terns (*Sterna albifrons*) on the beach to the south of the Reserve.

Before the Reserve was set up, the local fishermen carried out burning of large areas of the grassland, and bracken and gorse were also cut intermittently, measures which it is thought helped to maintain the flora. A controlled programme of burning in the early months of the year has been re-introduced by the Conservancy to assess its effects, and work is also going on to reduce the amount of scrub, which was probably kept in check by grazing rabbits prior to the onset of myxomatosis.

My first impression on approaching the Reserve from the south was one of noise - the incessant clamour of a bickering host of Herring Gulls (*Larus argentatus*) on the cliffs. Just outside the Reserve proper, we reached the Nether Kirkyard, which is the site of the old Parish Church of St. Cyrus, and is known locally as 'Beattie's Grave'. Beattie, a poet from Montrose, was buried here after he committed suicide for the love of a local lady.

Soon we were all bent double, or down on hands and knees in typical 'botanising' posture, to try to identify the many species of flowers. Mr. Carstairs told us that there were 330 recorded on the Reserve. We reached only a total of 160 but then we were only there for one day! One of the loveliest of all was the Clustered Bellflower (*Campanula glomerata*) which was growing in abundance in both its deep and pale blue forms. Shortly after this, we were thrilled to find our first plants of the Maiden Pink (*Dianthus deltoides*) and several clumps of creamy-white Nottingham Catchfly (*Silene nutans*), which was neither in Nottingham nor catching flies! These and several other plants on the Reserve are said to be close to the northern limit of their range. On climbing part of the way up the cliffs, we saw the bulbils of the Crow Garlic (*Allium vineale*) and some straggling plants of Wild Liquorice (*Astragalus glycyphyllos*). So the expert botanists had indeed a 'field day' and the beginners like myself learned a great deal.

In addition to the plants, many other interesting species were heard or seen. The ornithologists were pleased to hear the 'reeling' of a Grasshopper Warbler (*Locustella naevia*) near the entrance to the Reserve, and to see a family of young Stonechats (*Saxicola torquata*) perched in the gorse, waiting to be fed. There were many moths, butterflies and other insects, including Silver Brown Carpet, Yellow Shell, Plume, Shaded Broadbar, Yellow Underwing and species of Tortricoid moths; Painted Lady, Meadow Brown, Common Blue and Small Heath Butterflies; a Rose Chafer and a species of Scorpion Fly. Amphibians were represented by several Toads - one a male, showing his 'nuptial pads'.

All-in-all it was a most rewarding day, and we hope to return to St. Cyrus again.

M. Mowat

Note: A full list of flowers recorded on the Reserve is available in the Society's records.

Outing to Bonaly and the Capelaw Hill area - 9 July 1980

This was a hill walk rather than a specialised outing. The main attraction of the evening was a magnificent view from the top of the hill above Bonaly Tower over Edinburgh, the Firth of Forth and beyond to the edge of the Highlands. Gleaming in the distance we even saw the Firth of Tay, which

I have never seen from here before, and the sun was shining horizontally on the cliffs of May Island.

S. Gray

Outing to Portmore - 12 July 1980

Mr. Sidney Clark led a party of 14 on a circular route from Portmore Loch. Early rain soon cleared after which visibility was excellent.

In established Birch close to the car park we saw Common Wintergreen (*Pyrola minor*) in flower, while many of the trees in the same area were covered with a bearded lichen. From this woodland we passed by younger conifer plantations on our way to more open heather and blaeberry covered ground.

Amongst the birch trees a Large Emerald moth was seen, and soon after, a Large Yellow Underwing on Crowberry in the more open ground. A magnificent Wood Tiger moth remained stationary close to the ground on heather and blaeberry allowing close inspection and photography by the party.

Before leaving the moorland area we heard a pair of kestrels calling and soon spotted them in a tree near our path. We watched for a while before continuing quietly on our way without disturbing them.

Scrambling over a wall took us into typical hill pasture, and a good spot for lunch with shelter at our backs. From here we made our way to the high ground of Dundreich from where, following the earlier rain, the long distance views were excellent.

The route down from Dundreich was by a limestone gully on the Loch Burn where Brooklime (*Veronica beccabunga*), Common Butterwort (*Pinguicula vulgaris*), Marsh Willowherb (*Epilobium palustre*) and Hairy Stonecrop (*Sedum villosum*) were identified.

As we approached Portmore Loch, a family of Great Crested Grebes was spotted. After watching them we continued along the east side of the Loch back to the car park and the starting point of our circular walk.

E. Farquharson

Barbecue and moth study at Almondell - 2 August 1978

Thirty members of the Society met outside Broxburn Post Office at 8 pm on a somewhat overcast and humid evening and then proceeded to Almondell.

We met the two Rangers, Tony Anthony and Mary Konic, who had the log fire well alight when we arrived at the barbecue site on the river bank. The usual variety of sausages were soon lined up on the grill - rather resembling soldiers on a parade ground. This year succulent steaks were also in evidence and the wine that was passed round kept us cheerful as the rain clouds gathered. While we were grilling and feasting we were entertained by one or two of our less hungry and more energetic members showing us the art of sweep netting.

It was all good fun although with the accompanying thunder we realised we were on borrowed time as far as dry weather was concerned. However, the heavens did not open until we had packed our rucksacks up again.

Then it really did pour! So much so that we had to abandon our immediate visit to the moth trap and instead dashed to the nearby information centre. Tony showed us round the centre which at the time of writing is still in the process of construction. It was perfectly obvious to us, however, that when complete with the planned exhibition area this will be a really worthwhile place to visit in future years.

Finally, the rain did relent long enough for us to go outside in the garden behind the centre and see the moth trap with its powerful light in action.

No other excursion ever ends like a Barbecue/Moth study excursion. We returned to our cars an hour before midnight in pitch darkness, totally unaware who was walking beside us. Damp in person but not in spirits we had had an enjoyable, informative evening - quite a dramatic one too, sitting out a thunderstorm in a Lothian wood. We thank Tony and Mary very much.

Andrew Liston lists the following insects that were seen on the night - if the weather had been kinder the list would have been much more impressive.

C.A. Pountain

- Moths: The Snout (*Hypena proboscidalis*)
 (found by sweeping)
- Tawny Speckled Pug (*Eupithecia icterata*)
 Inside building
- Large Yellow Underwing (*Noctua pronuba*)
 At light outside building
- Plain Golden Y (*Plusia jota*)
 In trap
- Twin-spot Carpet (*Colostygia didymata*)
 2 specimens, swept and in trap
- Beetle: Large species of genus *Aphodius* (dung beetle family).
 Several mites on its underside. At trap.
- Lacewing: A *Hemerobius* species. Freshly emerged and very
 pale. Swept.

A.D. Liston

Outing to Craik Forest - 23 August 1980

With almost continuous poor weather there was some concern during the previous week over an outing as far from Edinburgh as Craik Forest. But there was no cause for worry as 23 August was one of the best Saturdays of the season. Mrs. Vida McFarland met us in Hawick and led the cars along the Borthwick Water through Roberton to the Forestry car park near Craik.

During the morning we slowly followed the nature trail identifying trees, flowers and fungi on the way. Dense woodland frequently gave way to more open areas, and plantings of individual trees added considerably to the variety and interest. The trail followed the Aithouse Burn for much of the way.

At one point Bullfinches repeatedly crossed our path making a welcome touch of colour amongst the green of the conifers.

A very local family of Goldcrests held our attention for a long time as they moved around in full view in a nearby tree.

The trail led to a waterfall and a clearing close by gave a good place for lunch. From the waterfall we returned by a different but equally attractive route to the car park.

No one in the party had visited Craik Forest before and we were delighted to have been introduced to an area new to us. Although the planned outing was now over everyone was anxious to make the most of such a perfect day so we returned to the forest for an additional walk along the old Roman road before returning to Edinburgh.

E. Farquharson

Blair Atholl weekend - 12-15 September 1980

Twenty members spent the weekend in the Blair Atholl area, the majority staying in guest houses in Blair Atholl and the remainder enjoying the luxury of the newly opened Youth Hostel in Pitlochry.

High winds and rain on Friday combined with a poor forecast for the weekend had everyone expecting the worst, so fine weather on Saturday morning was like a reprieve! We spent the morning following the Nature Trail along the side of the River Tilt which we joined not far from the Castle gates at a point where water for the meal mill runs in a lade close to the path. The mill, which is in the centre of Blair Atholl, has been recently restored and is well worth a visit when it can be seen working. The Tilt is fairly shallow along the first part of the trail and it has been suggested that somewhere here crossings were made in days gone by when Comyn's Road was the route through the Grampians to Speyside.

Our path followed the river closely with beech, oak, birch, Scots pine and alder growing on the banks. Where the riverbed was narrow there were good exposures of rock, but we examined these in greater detail when we walked through the Grotto, an eighteenth century 'folly' beside the river. This had been built from riverbed blocks of granite, and schist with glistening flakes of mica from the rock faces. Limestone from the exposures had also been used and calcium has been leaching out of the stones in the walls forming small stalactites.

The way back to the Castle passed beside the old walled garden, now derelict, on one side, and huge beeches, oaks, larches and firs dominating the other side.

In the afternoon the party broke up into small groups visiting the Castle and exploring the grounds, going for further walks and looking at

at the meal mill. Some followed the second nature trail through the coniferous woodland known as Diana's Grove where introduced species have been planted by successive Dukes since the early part of the eighteenth century. This must be one of the finest collections in the country. The sheer size of the older trees combined with the variety make a single visit quite inadequate.

Two energetic members completed their day by climbing Ben Vrackie behind Pitlochry before dark.

The weather continued to hold throughout Sunday. Four decided to climb Carn Liath, one of the nearer peaks of Beinn a' Ghlo, after which two went on to climb two more peaks, all three being 'Munro's' over 3000 feet.

The rest of the party went at a more scientific pace up the west side of the River Banvie following very roughly the route of the original way across the Grampians from Garry to Spey known as Comyn's Road. Comyn, a thirteenth century Earl of Atholl, built the road which continued in use for three centuries until the Minigaig Pass replaced it. Both these routes are at least 15 miles shorter than the present A9 but rise 1000 feet higher than the Drumochter Pass so would often be impassable during the winter months.

For the first two miles we walked through woods botanising all the way. Once on to the open hillside a sheltered lunch spot was found. After lunch some walked back to explore the woods in greater detail while the rest continued on to the settlements, now deserted, on the River Bruar. About here, Comyn's Road would have crossed the river, but we, after a brief rest, returned the way we had come.

On Monday we met at the Killiecrankie Visitor Centre to see the interpretive display before leaving the cars at Garry Bridge and walking along the Rivers Garry and Tummel. The walk had much in common with the walks on Saturday and Sunday, but the woods and rivers are one of the main attractions of the area. For much of the morning the rain was fine and the trees gave us a fair degree of protection for the first hour. Oak, beech, alder and birch were the predominating trees by the river with Sitka and Norway spruce, larch and Scots pine on different parts of the walk.

Before the dam was built at Pitlochry to form Loch Faskally, the flow of water in the River Tummel was far greater and the Linn was then known as the Falls of Tummel. Even on a wet day the Linn is still beautiful, but the rain discouraged us from staying long. The route back from the Linn on higher ground and further from the rivers was more overgrown and did not appear to be nearly as heavily used as the path leading to the Linn.

By 2 o'clock we were back at the car park, hungry and well and truly soaked. As the rain was getting heavier and the clouds were well down all thoughts of an afternoon walk were abandoned and everyone made for home.

E. Farquharson

Reference

Kerr, J. "Old Grampian Highways. Comyn's Road. Minigaig Pass".

Woodland within the Castle grounds

On the Saturday afternoon some members visited the woodland within the Castle grounds known as Diana's Grove after Diana, the Roman goddess of hunting.

All the trees in the woodland are introduced Conifers which were planted on rough undulating ground, first known as Diana's Wilderness, from 1737 onwards (although most of the large Conifers were not put in until 1872 and after) as part of the landscaping of the policies by the 2nd Duke of Atholl and his successors.

In the depth of the Grove one becomes overawed by the beauty and grandeur of the surrounding trees. Eight Giant Firs (*Abies grandis*), and eight Douglas Firs (*Pseudotsuga menziesii*) are over 150 feet tall - one Giant Fir being nearly 180 feet - and there are sixty trees including five more species - Low's Fir (*Abies concolor* var. *lowiana*), Noble Fir (*Abies procera*), Sitka Spruce (*Picea sitchensis*), Wellingtonia (*Sequoiadendron giganteum*), Western Red Cedar (*Thuja plicata*) - more than 130 feet tall. Less tall trees include European Larch (*Larix decidua*), Lawson Cypress (*Chamaecyparis lawsoniana*), Mountain Hemlock (*Tsuga heterophylla*), Japanese Larch (*Larix kaempferi*), Oriental Spruce (*Picea orientalis*) and Caucasus Fir (*Abies nordmanniana*).

It has been said of Diana's Grove that it is unlikely that any other two acres in the world contains such a number of different Conifers of such height and of such small age. The conditions of soil and climate of this area must be ideal for their growth.

To help visitors with the identification of trees in the Grove, close to the entrance gate there is a plan on which the trees are listed according to the numbers painted on the trees. Also, a copy of the list is available at the Castle.

J. Raeburn

Some insects seen in the Pitlochry area - 13-15 September 1980

The weekend started in an interesting way when vacated leaf-mines made by the larva of the sawfly *Heterarthrus aceris* (Kaltenbach) were found on a young sycamore (*Acer pseudoplatanus*) growing in the garden of Pitlochry Youth Hostel on the 13th. This insect was thought to occur north to Roxburghshire by Benson (1952). Recently I have published records of it from the Edinburgh area (Liston, 1980), but the present record from Perthshire pushes its known range even further north. *H. aceris* is likely to have existed undetected in this area for many years, as further specimens found several miles away in the grounds at Castle Blair seem to suggest. The empty mine is unique in that a neat circle of 1 cm diameter is cut out of the upper epidermis just before the larva leaves. This forms part of an envelope in which the larva passes the winter. When the circular envelope lands on the ground, the larva has the power to flick its body and move its disc into a more suitable spot if this is necessary. It will do this, for example, if the sun is shining too strongly and it is in danger of becoming desiccated in an exposed position. This instinct has earned *aceris* the common name 'Jumping Disc Sawfly'. The peculiarities of this species's life history

are discussed in detail in various well known natural history works (e.g. Step, 1932. "Wasps, Bees, Ants and Allied Insects of the British Isles". Warne). Although parasitism of larvae is far less severe in Scottish populations of *aceris* than in southern England, adults are just as scarce.

On the evening of the 13th, Mr. A. Craig and I climbed Ben-y-Vrackie (2757 feet), the hill behind Pitlochry. The good weather which we had enjoyed during the earlier part of the day did not hold. Cloud came down and rain started. Fortunately there was a sudden improvement when we reached the summit, giving dramatic views over the surrounding countryside through the swirling mist. For ten minutes we investigated the plants on the north-facing slope of the hill. *Salix herbacea* L. (Least Willow) was found to be abundant and galls of *Pontania crassipes* (Thomson) were attached to many of the leaves. This characteristically arctic-alpine sawfly is seldom found below 2500 feet in Britain. Benson (1958) recorded *crassipes* from the tops of Snowdonia, the Lake District, the Grampians, Ben Loyal (or Ben Laoghal) in Sutherland and the Island of Rhum. I have also found it in the Moffat Hills (White Coomb, found by Mr. A. Buckham also) and various tops in Wester Ross. The gall is rounded, projects equally above and below the leaf-blade, is usually found near the base of the leaf and is reddish-brown in colour. No other gall-forming insect attacks *S. herbacea* in Britain. *Pontania crassipes* is circumpolar, occurring across the high arctic tundra of Canada and Northern Europe. Relict populations occur high in all of the major European mountain ranges.

On the 14th a party of four had a very pleasant walk, in beautiful weather, over Carn Liath of Beinn a' Ghlo (about 3200 feet). Two of us continued over an intermediate 'Munro' and onto the summit of Beinn a' Ghlo itself (about 3500 feet). Three Ptarmigan and some Mountain Hares, one of which was showing signs of a developing white coat, were seen. *Pontania crassipes* was seen again, but large areas of willow seemed to be free of galls, possibly because the overwintering stages of the sawfly (full-grown larvae leave their galls to build their cocoons in the soil) were not protected from freezing by an insulating blanket of snow on the more exposed parts of the ridge. Walking back along the side of the mountain in Glen Loch we encountered two large herds of Red Deer.

The morning of the 15th, which was very wet, was spent in Linn of Tummel. Of entomological interest were two specimens of *Conops quadri-fasciata* De Geer (Diptera, Conopidae). Conopid flies are always rather scarce. They are fast fliers, often found feeding at flowers (these two were on Devil's Bit Scabious) and are fairly good mimics of wasps. They are interesting in that all species develop as solitary internal parasitoids of wasps and bees. The eggs are laid on the host wasp or bee while it is in flight. The larva develops rapidly in the abdomen of the insect on which the egg was laid. The host is dead, the Conopid larva filling its abdomen by the time the latter is ready to pupate. The adult fly bursts out of its puparium and the remains of its host in the following spring (a puparium is the hardened last larval skin which performs the same functions as the cocoons of some Lepidoptera).

A.D. Liston

References

- Benson, R.B. "Hymenoptera Symphyta". Handbooks for the identification of British insects. 6(2b-c). 1952-58. London.
- Liston, A.D. Notes on some sawflies (Hym., Symphyta) found in Scotland, with a description of a new species of *Pachynematus* Konow from Wester Ross. Naturalist. 105: 51-54. 1980.

Wildfowl weekend in Galloway - 1-2 November 1980

On Saturday, 1 November, 17 members met at Dumfries and proceeded by way of Glencaple and Caerlaverock Castle (we enjoyed a quick visit to this very impressive ruin) to Caerlaverock Nature Reserve at East Park (Wildfowl Trust Nature Reserve). We were met by the Assistant Warden who identified the birds to be seen from the glass fronted observatory overlooking the pond. We were taken along to one of the observatory towers by way of the screened pathway with hides set into it at strategic viewpoints. From the top of the tower we were lucky in seeing several hundred Barnacle Geese feeding on the Merse. (There are three populations of Barnacle Geese. The one which winters in Britain comes from Spitzbergen; these were the ones which we were looking at). In the sandy embankment close to the tower doorway we saw the holes of the hibernating Natterjack Toads.

On Sunday, 2 November, we visited Carlingwark Loch, then we went on to Threive Wildfowl Refuge at Kelton Mains (National Trust for Scotland) where we were met by Mr. McNish who took us to the two observation points. One is a hide by Threive Castle, the other an island refuge by the disused railway. The approach has been planted with a variety of berry bearing shrubs to give screen and at the same time to attract the berry eating birds in the winter. We saw a variety of Cotoneaster, Berberis, Snowberry and Dogwood all in berry and very colourful.

We had our lunch in Threive Gardens, then spent the afternoon on a visit to the south bank of Loch Ken, stopping at Glenlochan Dam, Balmaghie Church, where we watched duck - Pochard, Shoveler and Pintail. At Livingston we saw a flock of approximately 50 White-fronted Geese.

A list of birds seen during the weekend is with the Records Secretary.

B. Gordon

Miss Agnes Gunn

It is with sorrow that we record the death of our late Honorary President's sister, Miss Agnes Gunn.

The Society has been informed by her executors that, under the terms of her will, a proportion of her estate has been bequeathed to the Society.

In due course it is hoped that this most generous gift will be used in such a way as to benefit the Society and to act as a memorial to Mr. Peter Gunn and Miss Agnes Gunn.

ADDITIONS TO THE LIBRARY IN 1980

Pollard, E., Hooper, M.D.
and Moore, N.W.

Hedges (New Naturalist Series)

Stamp, L. Dudley

Nature Conservation in Britain
(New Naturalist Series)

and the following REPORTS:

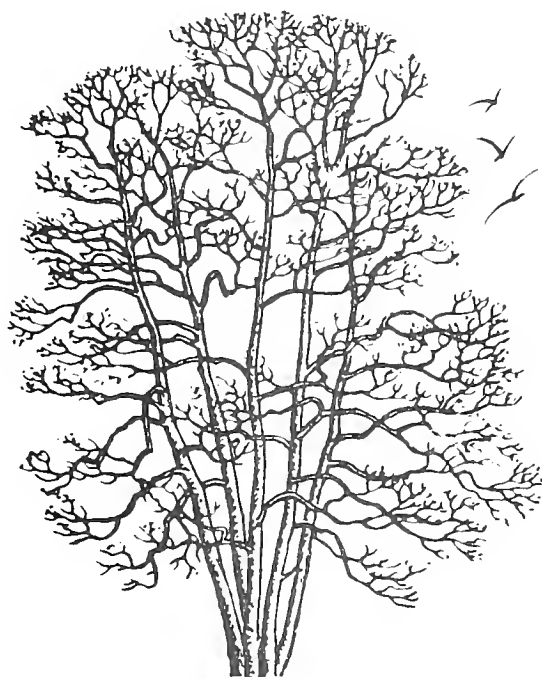
Gladhouse Local Nature Reserve - Preliminary Study 1979
(Lothian Regional Council - Department of Physical Planning)

Union Canal Project - 1st Interim Report, January to November 1979
(Central Regional Council; Countryside Commission; Lothian Regional Council)

Biological Survey of the Union Canal
(Lothian Regional Council - Department of Physical Planning)

Marine Mollusca of East Scotland - McKay, D.W., Smith, S.M.

**THE
EDINBURGH
NATURAL HISTORY SOCIETY**



JOURNAL

1981

EDINBURGH NATURAL HISTORY SOCIETY

1981

PRESIDENT	Miss J. Raeburn
VICE-PRESIDENTS	Mr. D. Jones. Miss N.F. Henderson
HONORARY SECRETARY	Mrs. C. Stewart 41 Craigleith Hill Avenue, Edinburgh EH4 2JL <i>Tel: 031-332-7524</i>
HONORARY TREASURER	Mr. A. Dickson 31 Alva Place, Edinburgh EH7 5AY <i>Tel: 031-661-1216</i>
MINUTES SECRETARY	Mrs. S. Litteljohn
COUNCIL MEMBERS	Mrs. E. Farquharson appointed 1979 Mr. W.D. Gill 1979 Mr. G. Reynolds 1979 Dr. R. Begg 1980 Mr. S. Clarke 1980 Mrs. E. Gillespie 1980 Mr. P.W. Brown 1981 Mr. C.P. Rawcliffe 1981 Mrs. J. Robinson 1981
JOURNAL COMMITTEE	Mrs. E. Farquharson Miss N.F. Henderson Miss H. Jackson Miss J. Raeburn - Convener Mr. C.P. Rawcliffe Mrs. C. Stewart
EXCURSION COMMITTEE	Miss M. Abel 2 Marchmont Street, Edinburgh EH9 1EJ Mrs. E. Gillespie 11 Drylaw Crescent, Edinburgh EH4 2AU Miss B. Gordon 17 Argyle Crescent, Edinburgh EH15 2QQ Miss A. McCafferty 1 Craighouse Road, Edinburgh EH10 5LQ Mrs. H.M. Miller 72 St. Albans Road, Edinburgh EH9 2PG Miss E. O'Donnell 22 Jordan Lane, Edinburgh EH10 4QZ
RECORDS SECRETARY	Miss M. Mowat 45 Merchiston Crescent, Edinburgh EH10 5AH
EXCURSION REPRESENTATIVE on the COUNCIL	Miss B. Gordon
LIBRARIAN	Miss F. Howie 3 Wellington Street, Edinburgh EH7 5EE <i>Tel: 031-556-6471</i>

CONTENTS

	Page
EDITORIAL	2
WINTER INDOOR MEETINGS	3
DALKEITH PARK - some features of its Physiography and Botany	4
FERAL MINK IN SCOTLAND	10
BIRDS AND MAMMALS IN THE HAND	14
FORTH ISLAND BIRD COUNTS - 1981	16
HARVEST	17
SEVEN LOCAL FERNS	19
WILDLIFE FROM A SUBURBAN GARDEN	22
EPITAPH FOR THE 'OLD SHAFTS'	23
SOME NOTES ON NATURAL HISTORY	25
OBSERVATIONS MADE BY MEMBERS DURING 1981	30
EXCURSIONS 1981	32
REPORTS AND EXTRACTS FROM REPORTS	33

EDITORIAL

Once again, the Journal reflects the wide range of interests and depths of study of Members. The Editorial Committee would like to thank all those who have contributed to it in any way at all.

Dr. W.W. Newey's fascinating article on Dalkeith Park was written by him for the Nature Conservancy and it has not been published elsewhere. As so many of our Readers take a great interest in the area, it has been printed in full with references included.

In the 1979 Journal, Mr. W.D. Gill introduced us to modern practices of arable farming in south-east Scotland for, as he wrote in his article, when the E.N.H.S. Outings go along river banks, sea shores, railway tracks and woodland paths, we often look over the fence at the various field crops. In 1980 he followed with an article on Sowing Time. This year he completes this series with an account of modern Harvest Methods.

We are always grateful to Mr. R.W.J. Smith for allowing us to put on record his annual Forth Island Bird Count. It is good to have an article on Feral Mink, as many Members are interested in the control of mink in nature reserves and elsewhere in the Lothian area.

Mrs. J. Robinson gives us a lively account of her course at Preston Montford Field Centre on 'Birds and Mammals in the Hand'. It is hoped that reading it will encourage other members to apply to the Council for financial help from the Ian Sime Fund to enable them to attend a Natural History course or activity.

Our thanks go to the Secretary, Minutes Secretary, Treasurer and Records Secretary for all their hard work throughout the year. We are grateful to the many members who support the Society in all kinds of ways, especially the Projectionist, the Librarian - we are glad that there is now a library cupboard at the Girl Guide Hall so that two trunks of books have not to be transported to each meeting - the Coffee Makers and last but not least, the members of the Excursion Committee who give so much time and thought to planning our outdoor activities.

Also we are glad that Mr. Gordon Finnie and his associates and Mrs. F.J. Anderson are continuing to help with the production of the Journal.

WINTER INDOOR MEETINGS 1981

January: Mr. John Cuthbert, Principal Scientific Officer, Head of the Wild Life and Pest Control Section of the Agricultural Scientific Service, gave a talk on "Introduced Mammals". Mr. Cuthbert said that when Man first arrived in this country two and a half thousand years ago he was accompanied by the House Mouse, and since then many other foreign mammals had made their home here. Some, like the Rabbits, which had been introduced by the Normans for food, had been brought deliberately but others had come by accident, as was the case of the plague-bearing Black Rats which came with the returning Crusaders. Other mammals had escaped from captivity and especially in the case of Mink and Squirrels which had adapted themselves so well to local conditions that serious competition had been set up between themselves and the indigenous species.

In 1932, Parliament gave power to control or eliminate harmful species, and it was hoped that the new 'Wildlife and Countryside Bill' would prohibit the entrance of new animals into this country. Although introduced wildlife was not ideal it must be accepted if it does not do too much harm.

February: "Winter Excursions to Loch Eck" was the subject of the lecture by Dr. Forbes McNaughton from the Department of Biological Science, Napier College. Dr. McNaughton who has specialised in the study of aphids, gave an account of field courses centred at Ben More, Argyll, where a wide variety of eco-systems are to be found such as forests, fresh water and sea lochs, arable land and wet areas.

March: "Botanising in the Highlands", by Mr. Adam Ritchie, Deputy Curator, Dundee Museum. Mr. Ritchie chose to talk about flowers found in the south-east Grampians (including the Angus Glens), the Central Highlands, Ben Lawers, the north-west of Scotland and Skye. He pointed out how local conditions and geological formation affected the type of plant found in each area and showed slides to illustrate his talk. He also showed pictures of how the natural forest was re-establishing itself in an area which was formerly a heather moor.

April: Members' Night. Talks illustrated by slides were given by the following members:

Mrs. E. Gillespie on 'Bladderworts and Liverworts',

Miss H. McHaffie on 'Ferns',

Miss N. Henderson on 'Birds in Shetland'.

Mr. D. Jones on 'The Seasons in the Scottish Hills', and

Miss Anne Marie Gillon showed slides taken on various excursions throughout the year.

During the coffee interval there was an Exhibition to show the use of the microscopes and stereo-magnifiers which had been acquired by the Society. Those contributing to this were Andrew David Liston with slides of the Sawflies, Heather McHaffie on Garden Mosses and Phillip Brown on Beetles.

October: It is the custom of the Society to have the October meeting addressed by its own members, and this year Mr. and Mrs. David Watson told us of their stay in Kuala Lumpur. Mr. Watson gave an account of overall conditions in Malaysia today and then Mrs. Watson commented on the slides showing animals, plants and landmarks which had become familiar to them during their stay in the East. Among the interesting places visited by them were the Cameron Highlands and Fraser Hill and in Eastern Malaysia they saw the work being done at the Sepelok Orangutan Sanctuary where efforts are being made to rehabilitate to their natural environment any animals which had been captured for commercial purposes. The Watsons also visited Sarawak and showed slides taken in the Bako National Park.

November: Mr. Grant Rogers selected the title 'Haunts of Wild Life' and, with excellent slides, showed how life had become adapted to different conditions. He began by talking about life found in the open sea and went on to describe different habitats such as sandy beaches, salt marshes, farmland and wet areas. As altitude increases or geological conditions change marked adaptations were observed and in spite of adverse conditions regeneration was taking place. Mr. Rogers pointed out the dangers of pollution especially along the sea shore.

December: The subject of Mr. Angus Erskine's talk was 'Poles Apart'. Mr. Erskine had led expeditions to the Arctic and had lived in the Antarctic for a year whilst engaged in map-making. He began his talk by pointing out that due to the influence of the Gulf Stream the Arctic had no snow at sea-level during the summer months whereas in the Antarctic the vast land mass had a thick snow-ice covering. Due to this difference more life existed in the Arctic and slides of mammals, plants and birds were shown. In the Antarctic life was supported by food from the sea only.

Mr. Erskine described different methods of transport used in the Arctic and Antarctic and pointed out that, in spite of modern inventions, the dog-team was the best in extreme conditions.

S. Litteljohn

DALKEITH PARK

Some Features of its Physiography and Botany

Dalkeith Park, together with the House, contains many features of great historical, geological and biological interest. This short account of the area consists of a summary of the principal scientific work, and outlines the importance of its status and educational value. The House is not included in the enquiry, the emphasis being chiefly upon the geological structure of the area, the evolution of the land-forms and the characteristics of the vegetation and soils. Although some of the physical features that occur within the Park are represented elsewhere in Midlothian it is principally within the Park, situated as it is between the two Esk rivers in countryside that has escaped development, where these features are best displayed. For this reason, the area has figured in literature over a very long period.

Geology and physiography

Two major rock formations occur in this area, which differ strikingly from each other in age and in composition; the basement rocks are of Carboniferous age and consist of sandstones, shales and blaes belonging to the Upper Coal Measures; almost everywhere, however, these Palaeozoic sedimentary rocks are covered by sheets of unconsolidated deposits of Quaternary age, consisting of sands, gravels and clays associated with the Pleistocene glaciation of Scotland. The erosion of the North and South Esk rivers into these deposits has given rise to many exposures of these two contrasted formations each of which produces interesting effects upon the scenery within the Park.

The Carboniferous rocks

Dalkeith lies near the centre of the syncline of Carboniferous rocks which form the Midlothian Coal basin. Only the upper strata are seen within the Park, however, and these are known as the Upper Coal Measures or the Barren Red strata. Some of the best exposures in existence occur in the Park, and their composition is revealed along the deeply incised valleys of both Esk rivers. It has also been recorded in trial borings made in the area, so that several descriptions of the succession have been given, particularly that of Macgregor (1929) and of Tulloch and Walton (1958). The rocks are also shown on geological maps, such as the one-inch and six-inch scales of the Geological Survey. In general, they consist of massive, usually soft and reddish sandstones with marly fireclays, purplish shales, occasional thin coals and a few bands of impure limestone, inclined in a southerly direction at angles ranging from 7 to 18 degrees. Marine fossils have been recorded in sections of the rocks along the North Esk near the House. The variations in the composition of the Carboniferous rocks are clearly expressed in the differences in the valley profile along the Esk rivers. The more resistant massive sandstones form deep gorges with vertical sides, whereas the softer shales and marls form valleys of much more gentle and open contour. All manner of variations of this kind may be observed along the North Esk between the Montague Bridge and the Meeting of the Waters.

The Quaternary deposits

The Carboniferous rocks are succeeded upwards by deposits of Quaternary age, associated with the Pleistocene glaciation of the area. The lowest of these consists of a thick layer of drift or lodgement till, the Basal Boulder Clay. This has been studied near Dalkeith and has been shown by the orientation of its stone component to have originated during the advance of eastward moving ice from the Highlands, which during a major stage of glaciation covered much of the Lothians (Kirby, 1968; Sissons, 1966).

Lying above the boulder clay is an extensive sheet of sands and gravels, termed the 'Middle Gravels' (Mitchell and Mykura, 1962). These deposits are of great significance as they exert a major influence upon the land-forms of the Park and they also form the principal parent material of the present surface soil of the area. They belong to a rather later phase of glaciation than that which produced the boulder clay, and in fact were deposited by streams of water derived from the melting of the ice-sheets. These fluvio-glacial deposits are abundant within the valley of the North Esk and form a

broad belt extending from Penicuik to the vicinity of Old Craighall, north of Dalkeith, in all about 12 miles in length. Traces of the sub-glacial rivers which conveyed the sand and gravels into the area of the Park and of the Esk valley in general occur in many places in Midlothian; one of these, which is of great local interest, is the well-defined curving gravel ridge which extends from Sheriffhall near the King's Gate of Dalkeith Park for one mile, to the north-north-west. This feature is considered an esker and it marks the course of a powerful sub-glacial stream flowing from ice which lay to the north into an ice-free area at Dalkeith.

The physiography of the Esk Terraces (Figures 1 and 2)

A striking feature of the relief and topography of Dalkeith Park and indeed of the whole of the middle and lower North Esk basin is a succession of terraces which rise like a series of steps from the present river level to their highest altitude, where they form the plateau on which much of the burgh of Dalkeith is built.

The terraces have been surveyed by Kirby (1969). Many points were selected upon their surfaces and used for the process of levelling from Ordnance Survey bench-marks¹; this work was preceded by examination of the area on stereoscopic pairs of aerial photographs and by field mapping of the terrace morphology and the drift types. Kirby has recognised several distinct stages in the formation of the terraces. The highest of them represent fragments of the upper surfaces of glacio-fluvial outwash deposits which were built up against a northward-retreating ice-front during deglaciation. The terraces thus decline gently northwards along the North Esk valley and are related to stages in downcutting by stream erosion corresponding to glacial retreat and also to post-glacial sea-level changes.

In Dalkeith Park, terrace levels are strongly developed within the peninsula of land situated between the Esk rivers and may be correlated in altitude with benches situated on the land beyond them. Thus a major terrace level occurs at an altitude of about 50 metres (150 ft) represented by the Steel Park and the Deanhead Park and extending beyond the South Esk river towards Smeaton Head. A sharp break of slope separates this shelf from the next lower terrace represented by Lady's Seat (altitude 42 metres [125 ft]) which also has a wide extension from this area along both banks of the Esk northwards of the confluence. All these benches are formed in the fluvio-glacial deposits of the Esk valley-train. At lower altitudes, however, and close to the present river level are much younger terraces which were produced much more recently by the river itself during its normal work of downcutting; these are much smaller features and are represented by patches of alluvium deposited along the inside of the meander swings.

The Dalkeith terraces are thus composite surfaces of complex origin and they are of considerable geomorphic interest; hence they have been described several times in the geological and geographical literature relating to the area: Cossar (1911), Ogilvie (1951), Tulloch and Walton (1958), Mitchell and Mykura (1962) and Kirby (1968).

¹Marks cut into rock or stone to help with surveying levels when map-making.

FIGURE 1: Section across Dalkeith Park near the meeting of the Waters.

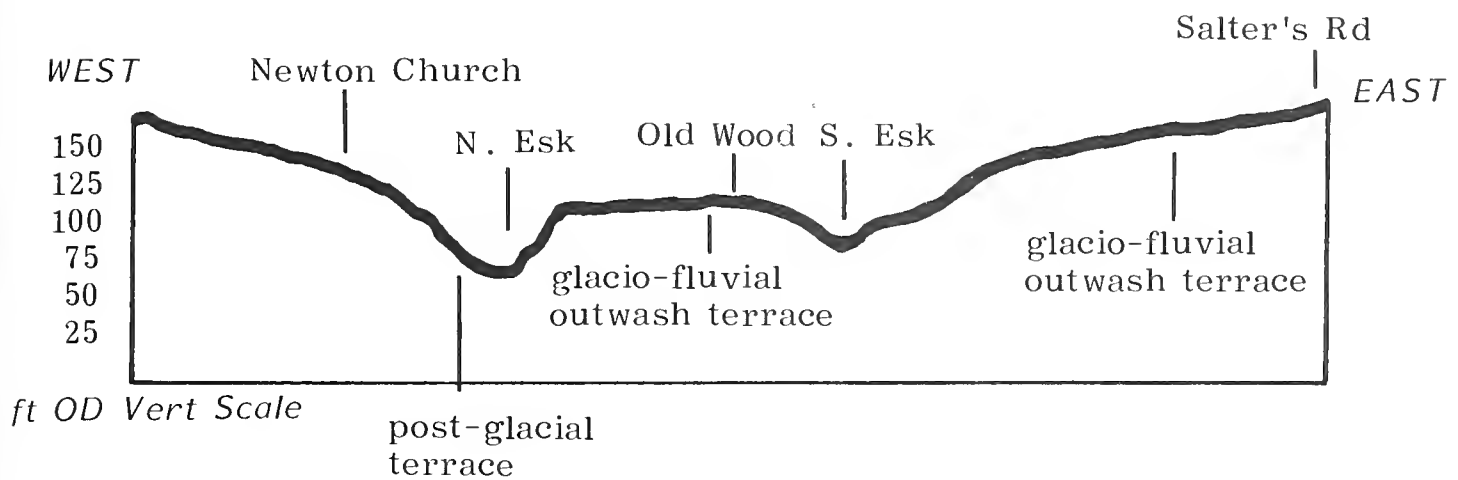
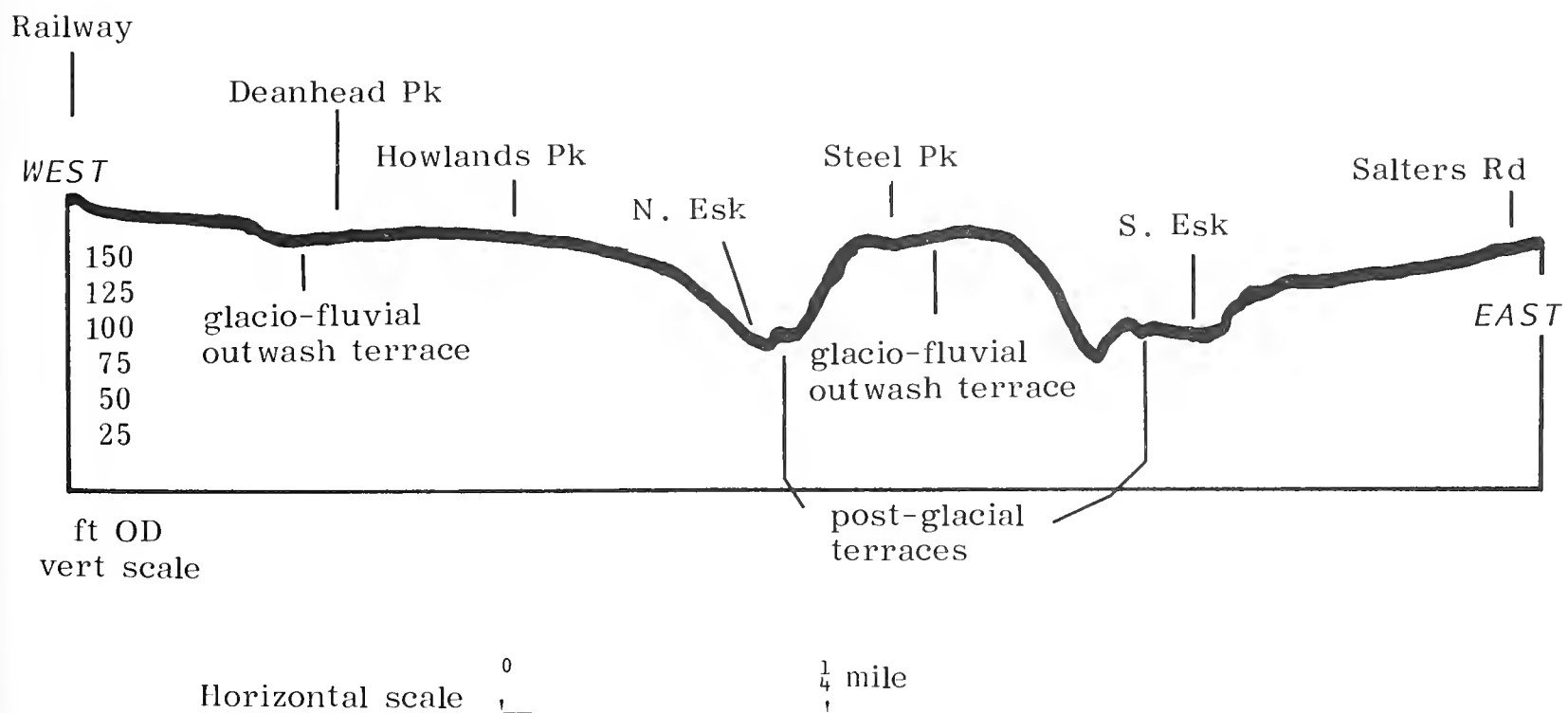


FIGURE 2: Section across Dalkeith Park near Dalkeith House.



Dalkeith Park Old Wood

Much of the area of the Park is devoted to private forestry and to farming. Within it, however, are numerous stands of oak; many of these are of great biological interest for they are the direct descendants of the climax oakwood that was characteristic of lowland Scotland in pre-historic times.

Several studies have indicated that the genus *Quercus* formed the dominant tree of the broad-leaved deciduous forest of south-east Scotland from about 6,000 BC onwards. Thus McVean and Ratcliffe (1962) have indicated on their map of the reconstructed distribution of oak, pine and birchwood during the present climatic period but before the beginning of human clearances that the whole of the Midland Valley below an altitude of about 800 feet had a forest cover dominated by oakwood. The evidence of pollen-analytical studies (Newey, 1968) also indicates the abundance of oak in the forests of the Esk area in pre-historic times; this is concordant with the opinion of Anderson (1967) who considered that mixed forest with oak covered all the moist fertile lowland areas of south Scotland where the rather heavy clay soils derived from glaciation occurred. Presumably this type of woodland remained an important element of the environment until the forest clearances of Anglo-Saxon and Medieval times (Fenton, 1951).

The oaks of the Old Wood were probably exploited for the Scottish shipbuilding industry of early modern times, for there is a record in the history of the House that planks from the Wood (certain to be oak) were used for the building of naval ships at Newhaven in 1512. Later references also testify to the continued existence of the oakwood; the Old Statistical Account refers to the "fine venerable oaks of great antiquity"; in addition the woodland is indicated upon the earliest vegetation maps of the area, such as that of Timothy Pont (1630) and that of Adair (1735). The Old Wood is also shown on General Roy's map of 1756, and R. Smith (1900) has shown the oak woodland on a vegetation map.

The first scientific description of the vegetation of the Old Wood is that of Fenton (1941). According to Fenton, only one species of oak was present, *Quercus robur*, the pedunculate oak, the oldest species being about 300 years. The wood had originally been natural but had been made semi-natural by grazing since historic times and this practice had prevented natural oak regeneration, except in places where fencing had excluded grazing animals. Fenton gave floristic lists of the subordinate vegetation of the Old Wood. The plant species of the field layer recorded by him are those associated with a soil of acid reaction, such as the grasses, *Deschampsia flexuosa*, *Festuca ovina*, and the dicotyledons, *Galium saxatile*, *Potentilla tormentilla* (*P. erecta*); he also has recorded the dwarf-shrubs, *Calluna vulgaris*, *Erica cinerea*, *Empetrum nigrum* and *Vaccinium myrtillus*; this subordinate flora of the Dalkeith Wood may be seen in many parts of the Southern Uplands where the soils are also of poor base status, and this presumably is the explanation of Fenton's comment that the Old Wood, though situated in a plain, is an outlier of the Southern Uplands. This heathy type of vegetation is similar to that described by Tansley (1949) as being characteristic of north and west Britain where soils tend to be siliceous and leached. Usually the dominant oak in such situations is *Quercus sessiliflora* (*Q. petraea*), the other British oak, *Q. robur*, preferring the heavier richer soils.

The latest study of the vegetation of the Old Wood is that of Fairbairn (1972). Dr. Fairbairn's paper is based upon a very extensive and detailed field study of the wood and he has provided a comprehensive account of its past and present ecology, its soils, and the taxonomy of the oak species present. He points out that specimens of both the native pedunculate oak, *Q. robur*, and the sessile oak, *Q. sessiliflora* (*Q. petraea*), are abundant, together with ingressed or hybrid forms. The field data were obtained from measurement of leaf length, acorn stalks and other parts of the plants as described by Cousens (1962, 1965). Fairbairn has been able to show that in the Old Wood the pedunculate oaks have different soil requirements from those of the sessile oaks; the former tend to occur on sites with heavier soils, whereas the latter are more often found on the lighter soils, such as on slopes near the stream banks. The practice of planting pedunculate oaks to maintain the stocking of sessile oakwoods however has given rise to much introgression. On the evidence of the tree rings, many of the trees are of great age, over 300 years; a considerable amount of regeneration occurs after good seed years and in sites where protection is provided from birds and grazing animals. The suitability of the area for oak is seen in the many fine young stands of planted specimens.

The strong correlation between the sessile oak and the lighter soils which Fairbairn has noted is also shown by a transect of soil and vegetation made in the area by Bain (1972). At a very steeply sloping site near the North Esk below *Q. sessiliflora* (*Q. petraea*) a species list of the field layer showed communities of plants characteristic of lighter and podsolised soil, derived from the glacial sands and gravels. The soil profile was that of a brown forest podsol soil of low base status, pH 3.8.

The Old Wood, it is thought, may contain specimens of interest to a mycologist, although a survey of the fungi has never been made¹. Even a casual inspection of the woodland in the autumn yields many of the species of British woodlands. The following are some of those recently seen: *Russula ochroleuca*, *R. atropurpurea*, *R. fellea*, *R. cyanoxantha*, *R. vesca*, *Lactarius quietus*, *Collybia dryophila*, *Phallus impudicus*, *Amanita citrina*, *Boletus reticulatus*.

Summary of interest and importance

It would be difficult to find an area so close to a city which contains so many features of interest as Dalkeith Park. These, however, are not immediately obvious: there is no 'tourist attraction', and the casual visitor might perceive nothing more than an area of pleasantly rolling countryside of open farmland or well-ordered forestry plantations. There is little, in fact, to tempt the casual visitor, which is perhaps just as well. The interest features are there but they have to be pointed out, studied and thought about.

A good deal of Scotland's geological history and botany is enshrined within this Park; there are the Carboniferous exposures - the Barren Red rocks of ancient deserts. Above these are the glacial features, the ice-moulded eskers and the stately terraces shaped by ancient torrents when

¹Note: On 19th September 1981 the Botanical Society of Edinburgh held a Fungus Foray in the Dalkeith Woods. The outing was led by Dr. Roy Watling.

mankind was still a cave-dweller. Finally, there are the botanical features, living reminders of a great oakwood forest that extended right across lowland Scotland from Clyde to Forth before man learned how to clear woods and to plant crops.

Because of these interests the area has always attracted teachers and students, and it is hoped, always will. It is used by geography classes from Dalkeith and by botany and geography students from Edinburgh University; it attracts both undergraduate and postgraduate students of all ages and of many interests.

W.W. Newey
Department of Geography
University of Edinburgh

Acknowledgements

The writer wishes to record his gratitude to the Duke of Buccleuch and to the Buccleuch Estates for permitting access to Dalkeith Park. He is also very grateful to Dr. W.A. Fairbairn for helpful discussion and guidance on many matters relating to the ecology of the Old Wood.

A list of Reference Books is lodged with the Librarian.

FERAL MINK IN SCOTLAND

Not for the first time has an introduced animal become a problem in its country of adoption. The rat, rabbit, grey squirrel and coypu to name a few are all alien to this country and all have become major pests. To these few we have now added another - the North American Mink (*Mustela vison*). The problems which arise when a new species is introduced whether by accident or design are never very apparent at the outset; some are only introduced because of a desire to see some particularly nice looking animal in our country. Unfortunately, some introduced species can cause problems either by upsetting the biological environment into which they find themselves projected or by causing severe economic losses to certain industries, e.g. rabbits to agriculture or grey squirrels to forestry and very often both factors apply. In this respect the Mink is no exception.

Introduction

A native of North America, the mink ranges naturally throughout most of Canada and the United States. Valued by the trappers of North America, who trapped the wild mink in large numbers, the species was eventually bred in fur farms in these countries and it was not long before fur farmers in Europe discovered the North American Mink. Introductions of this species were made to Europe during the early 1920s and the first British mink farms were set up in 1929. From that time the mink farming industry expanded and with minor ups and downs in Scotland alone there were 68 farms in 1965. Due, however, to economic circumstances and possibly to the introduction of legislation, the number of farms is now down to a handful. In the early days many farms had inadequate means of controlling escaped animals, having poorly constructed cages and poor, and in some cases, non-existent perimeter fences.

In some instances mink farms became victims of vandals and storm damage which, on more than one occasion, allowed mink to escape to the surrounding countryside. Whatever the cause there was no doubt that escaped mink could survive the rigours of the Scottish climate.

In the early days some doubts were expressed regarding this possibility but it soon became apparent that the animal could thrive exceptionally well. The lesson never seems to be learnt that an introduced species has a heavy bias towards causing trouble if allowed to run free in its country of adoption.

In its native habitat a species is normally in a state of balance with that habitat. This also applies to its food supply as well as to the terrain and vegetation within which the species lives. In the country of adoption these factors may only be obtained by the ousting of already established species causing biological and economic losses in so doing. It would seem, however, that as yet the amount of damage done to agriculture in Scotland, mainly to poultry, has been remarkably small. The loss to wild fowl populations and to fishing interests is a very real one. It is in this field that the potential danger lies most heavily. In Iceland feral mink have caused extensive damage to bird life and to freshwater fishing. Likewise in Norway and Sweden, losses have been caused to small game, fish and small tame animals. It was because of the potential danger rather than the real that legislative measures were taken during 1961 to control the conditions under which mink were kept and so try to reduce the number of escapes.

By 1961 it had become obvious that mink could survive and breed readily in a feral state. In 1962 the Government took powers to control, by licence, all mink farms by the Mink (Importation and Keeping) Order made under the Destructive Imported Animals Act of 1932. The Order made it necessary that (a) every mink breeder obtain a licence, issued when his premises reached the standards of security laid down; (b) the importation of mink be prohibited except under licence; (c) breeders be required to report escapes from their premises; and (d) all occupiers of land report the presence of feral mink to the Department of Agriculture and Fisheries. Concurrently, the Pest Control staff of the Department of Agriculture and Fisheries was augmented by four in order to carry out regular inspections of mink farms, check-up on reported escapes, carry out survey work and trap areas where feral mink were known to exist.

In the light of experience, the Government now allow the importation of mink by general licence. Also, since it became apparent that complete extermination was deemed impossible, the Government shed their trapping responsibility as from August 1970. Thereafter, occupiers of land became responsible for trapping any mink known to be living on their land. Feral mink are now found or have been caught in most of the Scottish counties and a small number have been caught in Shetland. It must therefore be obvious that the animal is now widespread and that the possibility of catching all the mink in some of the more remote regions is very slim indeed and unless people know what to look for, the problem of trapping and shooting is that much more difficult.

Description

The mink is a member of the Mustelidae which group contains the stoat, weasel, badger, otter, pole-cat and pine-marten. All are carnivores. In the wild state the males measure up to 2 feet from nose to tip of tail, the female being somewhat less. The males weigh about 2.5 - 3.5 lb, the females again being a little lighter. The colour is nearly uniform dark brown, with slightly lighter shading below, the colour deepening towards the tail which may be nearly black. The tail is fully furred. The chin has a white patch and there are often irregular white spots of hair on the throat, breast and belly. There is a tendency for the offspring of escaped mink to revert to the brown colouration from greys, pastels and blue-greys commonly found on fur farms but these colours may also be found in the feral state. The legs are short, nonetheless the animal is lithe and graceful in action. The eyes are prominent on the triangular-shaped head. The ears are small but readily seen at close quarters. The anal musk glands are well developed and can be highly offensive to man. There are five toes on each foot but normally only four toes show on the tracks. In soft mud or sand all five may be imprinted. Mating takes place from late February to early April during which time the males are restless and range over a wide area. After a gestation period of approximately seven weeks the female gives birth to a litter of three to ten kits (more have been recorded) from late April to early June. There is only one litter per year. The young are born in a dry chamber lined with bedding material such as feathers, dry grass and leaves. The chamber is usually found in a ready-made burrow in a bank, a hole in a log or tree, a rock crevice or pile of stones. The female looks after the young only occasionally going away and the families remain together until about the end of August when the group breaks up. Young females are fully grown at about 10 months and sexually mature at 1 year. The males are not fully grown until they are 1½ years old.

Habitat

The mink is usually found associated with water and is semi-aquatic in habit. It is adapted to live in the border lands between water and woods and can live in and out of water. Although a good swimmer it is inferior to the otter both in its power to swim and to catch fish. The hunting ground selected, is in nearly every case a watercourse which may be situated in comparatively rough or rugged ground or in open country. Along the stream or loch side there is usually timber, weeds, reeds, thickets, a heavy growth of grass or some other material to serve as cover and it hunts a given area until its food supply grows scarce. It then moves on a mile or two along stream or overland in search of new hunting grounds. It may change many times during a season but always keeping to a well-defined area which it knows and considers is its range. This might be about 5 miles in diameter.

Food and other habits

Fish of all types form nearly half of the mink's food supply. The remainder of the diet consists of small mammals such as voles, mice, rats and both large and small birds. Coastal mink subsist largely upon marine crustaceans such as crabs. Its sense of smell is very good and it may travel a long way scenting out its prey. Sometimes more is killed than can be eaten at once. They are mainly nocturnal hunters though when plentiful they can

be seen during the hours of daylight. Mink are great wanderers particularly the males who may travel long distances from their home territory. One peculiarity of such travel is that they invariably visit the same spots when making these trips, going under exposed tree-stump roots, through hollow logs, under an undercut banking, examining ditches and drains on their way. They make such runs fairly regularly, maybe as often as once every 10 to 14 days. It is this habit which makes trapping very often a long term process. Not all mink, however, will travel in this manner. Some remain in the vicinity of the spot where they were born, going away only occasionally on short trips of a few miles. The animal seldom walks but rather lopes along, sometimes taking jumps of around 15 to 20 inches. Soft muddy parts where mink may come out of the water and onto the bank will often show the foot-prints which are quite distinctive. They are about 1-1.5 inches across and show the claw marks as sharp points at the tip of each toe. Sometimes droppings will be found on selected logs or stones and, if fresh, these give a sure indication that the mink is in fairly close proximity.

Trapping

Where mink are known to be using an area of land they can be trapped or shot. Experience shows that they tend to frequent some parts of their territory more often than others and by placing traps at suitable sites it is possible to catch mink in the same place over a long period of time while traps at some other site further up or downstream may never catch at all. Wire cage traps are normally used and can be baited with some kind of meat or fish, the bait being placed at one end of the trap. The animal springs the trap by releasing a trip plate while trying to take away the bait. The traps are placed along the river bank, maybe set on or beside logs where a tree has fallen across a river or possibly in the hollow of a bank which water has undercut. It is very often in these undercut banks that droppings will be found on stones. If it is known there is a den where a mink family is being raised then traps can be set close to the den. The whole family can be caught very quickly. In any case, the traps should always be set very close to or, where shallow water occurs, in the water itself. The traps should be covered with suitable covering material such as wet leaves, grass, grass divots or simply stones, all to fit into the general surroundings. If tunnel traps are used it will be discovered that the humane rabbit traps such as the Imbra and Fenn can be used effectively by being built into stone or wood tunnels along the river bank. These traps do not require baiting and provided they are visited regularly they may in fact be a fruitful source of catches. Animals caught in cages should be humanely disposed of as soon as possible. On no account should a bare hand be put into a cage to take the animal out. They will bite without hesitation and tend to forget when to let go.

Conclusions

There has been much debate, some of it quite heated, concerning the presence of mink in areas of biological interest - in particular areas where large numbers of water-fowl, waders and other birds gather to feed and/or roost. At the present time there is one inescapable fact which must be faced by everyone concerned with wild-life. The mink is here to stay whether we like it or not. Analogies with other countries can be misleading. Differences in geographical, environmental and habitat factors can and do create conditions which give very different answers when set against these same factors in our

own country. The problem is a relatively new one in this country so we still do not know fully how our resident species will react to the presence of this new predator. It is another carnivore and will hunt its prey as do stoat, weasel, otter and badger. It is fairly safe to say that initially the presence of mink in any given area for the first time will possibly cause an upset in the biological balance. Species may decrease in numbers or even disappear. So too will the mink simply because its food supply has gone. But, and this is where we must be fair and careful, there could be other factors involved in the dispersal of the various species of mammals or birds from any given area and quite unconnected with the presence of mink. For instance, the presence of the Brown rat (*Rattus norvegicus*) can cause problems among ground nesting birds and the lack of an adequate food supply for these other birds and animals may cause them to disperse. That there has not been a major biological disaster due to mink is probably due to the fact that control to a greater or lesser degree has been taking place for quite a long time. Occupiers of land should adopt and apply the same principles to the mink as they have done to the rabbit. Control measures should be taken immediately it is known that the animal is present. Next week may be too late. Riparian occupiers with adjacent beats are particularly vulnerable and should adopt a means of letting each other know when it is discovered that mink are present on any part of a river, stream or loch. Control is still possible : extermination is unlikely.

P.W. Brown

BIRDS AND MAMMALS IN THE HAND

(4-11th September, 1981)

Preston Montford Field Centre, nr. Shrewsbury

With support from the Ian Sime Fund, I was able to participate in the above course which was an amalgam of two popular courses staged at the Centre in previous years, with Mr. David James and Mr. Adrian Bayley (Warden) as course directors.

For the first three days the emphasis was on bird ringing. Topics covered included catching and handling methods, identification and examination of birds in the hand (sexing, ageing, wing measurements, weighing, collecting external parasites), fitting rings, recording methods and simple analysis of data. The necessary permits had been obtained in advance to enable participants to handle and ring birds under Mr. James' close supervision, as ringing can only be undertaken following a lengthy training programme prescribed by the British Trust for Ornithology (see B.T.O. Guide 16).

On the first two mornings we rose at 6.30 a.m. to erect mist-nets at three different sites in the grounds of the Centre and thereafter inspected them every 15 minutes for any catches. The mist-nets varied in length between 20, 30, 40 and 60 feet and were erected with the aid of long tent-type poles and guy ropes, each net having four 'shelves'. Blue Tit and Robin were the most frequent finds, but also of interest were Blackcap, a Pied Flycatcher, Nuthatch, Treecreeper and a Tawny Owl - we also had the company of a Barn Owl one night while out 'badger-watching'. The birds were kept in small

cloth bags till it was their turn to be recorded. (A note is kept by the Ringer of ring number, species, sex, age [using code from the Ringer's Handbook], weight and wing length).

David James gave us a fascinating insight into the historical beginnings of bird ringing and outlined the scheme of licencing for trainees and ringers (Trainee Licence, 'C' Licence, 'A' and 'B' Licences). He also illustrated the size range of the rings used (from size AA, say for a wren, to one large enough for a mute swan). Although the headquarters of the B.T.O. is now at Tring, the rings still bear the inscription: "Inform British Museum, London SW7" to which address any recoveries (e.g. rings from dead birds) or 'controls' (records of live birds which already bore rings) should be sent. He pointed out the difference between residual and reduced, and emarginate and notched feathers, and stressed that the numbering of primaries is reversed during moult (from the centre outwards). The colouration in plumage is a useful aid in determining the age of birds - particularly in blue tits. Sexing can prove more difficult.

The emphasis for the rest of the week changed to the study of the commoner small mammals including mice, voles and shrews, to learn something of their reproductive condition, movement and behaviour patterns, habitat preferences and distribution patterns. Under Adrian Bayley's guidance we set out 60 Longworth traps, together with the same number of bottle traps in three different habitats - hedgerow, grassland and woodland. The Longworth traps proved markedly more successful than the bottles, enabling us to examine Woodmice, Bank and Field Voles and Common Shrews, the majority of our finds being made in the hedgerow. Some time was also spent examining the remains of small mammals found in owl pellets and a useful key to identifying these is obtainable from the Mammal Society¹.

During the last two days of the course, a survey of a 10 km grid square was undertaken in the area surrounding Church Stretton. As well as setting traps in the area information was elicited from local farmers and householders in an effort to establish evidence of various species, so that this information could be passed on (record cards, giving grid references) to the Biological Records Centre, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, for eventual inclusion in the Mammal Atlas.

Adrian Bayley also found time to demonstrate how to preserve and mount a pelt, taking appropriate measurements (length of tail, body length, hind foot, weight). He also gave directions on the cleaning of skulls, etc. (Vim and Steradent being useful when identifying remains in pellets).

During the week we also managed to spend time on the banks of the Severn at Cilcewydd Bridge looking at otter spraints; and also went into the caves at Crickheath Hill, by Pant, to look at the Lesser Horseshoe Bats to be found there. Incidentally, earlier in the year Crickheath Hill boasts at least seven varieties of orchid; likewise the old quarry area next to Loton Deer Park is also of great botanical interest.

All in all, it proved a most illuminating week, greatly abetted by the boundless energy and humour of our two tutors - the sighting of a Kingfisher by the River Severn providing a truly happy ending.

J. Robinson

¹The Mammal Society
Harvest House
62 London Road, Reading, Berkshire.

FORTH ISLAND BIRD COUNTS - 1981

	Craigleith	Lamb	Fidra	Eye broughty	Inchkeith	Inchmickery
Fulmar	77	3	83		491	2
Cormorant	42	102		30		
Shag	252	220	43		6	c14
Gt Bl Back	3					
Lesser Bl Back	?250	c5	X		X	
Herring Gull	2000+	c220	X	X	X	
Kittiwake	X	96	456		195	
Common Tern			c50			fewer
Arctic Tern			2+			
Roseate Tern						2+
Sandwich Tern						normal
Razorbill	41	18	28		26	
Guillemot	X	1060	73		6	
Puffin	1400		175		630	

Fulmar - occupied sites not necessarily breeding

Puffin - all birds on land or offshore

All others - pairs or nests

Inchmickery counts by kind permission of the R.S.P.B.

Once again the weather for the boat trips (organised this year by Allan Brown) left a lot to be desired. With monotonous regularity the wind was fresh or strong from the south-west except for the second Craigleith attempt when it swung to the north-west allowing just enough shelter for us to land. The heavy showers, however, did not fall while the actual counting was being done so the end result was much better than in 1980 except that we did not attempt the east cliff of Craigleith from the boat.

In 1980, we had the optimistic feeling that the recent decline in numbers of some of the breeding seabirds had stopped and that the outlook was more hopeful. This optimism has proved justified and there has been an astonishing increase of some species. Shags on the three adjacent islands of Craigleith, Lamb and Fidra increased by some 40% from a total of 361 to 515 nests. Kittiwakes on Craigleith were not counted but Lamb was well up and Fidra had its highest numbers ever with 456 nests - 200 more than in 1979.

The decrease in the Shag population had been shown to be caused by PSP (paralytic shellfish poisoning) caused by a 'bloom' of microscopic phytoplankton in the North Sea. It was suggested that the main cause of this 'bloom' or 'red-tide' might be the heavy flow of nutrients from the Forth originating from the crude sewage dumped off Seafield. If this were so then the new sewage disposal system might be expected to restrict the annual planktonic 'bloom' and the toxins produced by it. Is this a case of 'cause and

effect'? It is too early to be certain but we must hope that the mass deaths of Shags and other species are a thing of the past. Guillemots have never, apparently, been affected by PSP and the annual increase continues unabated on both Fidra and Lamb.

Another cause for satisfaction (for us if not for the gulls) is the now annual occurrence of botulism among the Herring Gulls. Since the early 1930s these gulls have been increasing at an annual rate of some 17% which means that their numbers more than doubled every five years. This would not be too drastic if there were only a few hundred pairs but, a few years ago, the Forth Island breeding population had increased to more than 20,000 pairs and was threatening to swamp every island to the exclusion of terns and other species. This year we counted 75 dead birds on Inchkeith and 30 on Craigleith, some (or all) dead from this disease. This was in June and far more would be affected later in the year. A few years ago it seemed that nothing could stop the inexorable advance of the Herring Gull except extermination by man. Hopefully, botulism will impose a natural control and keep the numbers of this noisy, aggressive interesting rascal at a reasonable level.

The greatest joy of the trips was to find that terns had returned to Fidra after a long absence. There were 52 nests with eggs, mostly Common Terns but a very few Arctic identified and the colony still looked to be flourishing when viewed from Yellowcraigs in July. The R.S.P.B. report on Inchmickery is not yet to hand but reports indicate that the Roseates have had a very bad year with only some two pairs breeding. Thirty years ago there were 500 pairs on this island and this delightful bird would seem to be losing its last foothold in Scotland. The colonisation of the island by Fulmar is poor recompense for their loss. It is a sorry footnote to an otherwise excellent year.

R.W.J. Smith

HARVEST

At school we were taught about the industrial and agrarian revolutions which occurred during the second half of the eighteenth century. It is easy to overlook the fact that most of us have seen far greater changes during recent years. Nowhere is this more clearly seen than in the process of cereal harvest.

Harvest was traditionally the climax of the farming year with 'harvest home', harvest suppers and harvest festivals acknowledging this. All available labour was involved in the process and the introduction of the reaper and binder did not alter the fact that harvest was merely the securing of the crop and that threshing had to follow on through the winter months.

The combine harvester has changed all this. Today grain harvest is a mundane affair requiring few hands and it has become just one more task in the cycle of work on an arable farm. As combine harvesters became more widespread after the Second World War the standard size was 6 feet or 8 feet 6 inches cutting width. Although larger machines were used in America, it was considered that for our relatively small fields and narrow roads and

gates, anything bigger would be too cumbersome. In the event, size has steadily increased and 18 foot and 22 foot machines are now common. For transport, the wide cutting portion at the front is removed and carried sideways on a trailer.

The modern combine is a versatile machine which can adapt to a range of situations. Basically it starts at the front with fingers which lift any fallen crop off the ground. This is followed by a knife which cuts the crop whilst simultaneously a reel, or windmill affair, guides the crop into the mouth of the machine. Augers take it into the threshing drum. This is a fast rotating drum which has corrugated metal rasping bars on its circumference. This drum rotates within a stationary cylinder and as the crop passes between, the grain is threshed from the straw. The operator adjusts the width between the moving and stationary parts according to the crop to ensure that complete threshing takes place, yet without damage to the grain. If the gap is too small, grain becomes broken and is then unsuitable for seed, milling or malting.

A fan is used to blow away chaff and other light contaminants. The straw is agitated to the rear of the combine and any grain still held in the straw is shaken out. An arrangement of sieves separates grain from broken straws and larger debris.

On early combines grain was fed into sacks. Today it is stored in a holding tank on the combine and transferred by auger to a grain trailer which takes the grain to store. This can be done on the move, and when harvesting conditions are good the aim is to ensure that trailers can prevent the combine from becoming full and thus having to stop. If necessary the operation can continue during hours of darkness.

At the barn, grain is tipped from trailer into a pit. From here it is elevated to a place of storage and en route undergoes further cleaning to remove unwanted debris. If grain is to remain in store it has to be kept dry and cool. It may be passed over a hot air drier prior to storage or the storage area might incorporate a system of air ducts which permit air to be blown through the bulk of grain. Long thermometers are inserted into the grain bulk to check temperature from time to time. Grain respiration can lead to hot spots and moulding if conditions are not maintained correctly.

Straw has to be handled separately. A modification can be fitted to the rear of a combine which chops and spreads the straw onto the ground. It is subsequently incorporated into the soil at ploughing. An easier alternative is to burn the straw. This method may seem undesirable to the layman but it is agriculturally sound. The essential plant nutrients in the burnt straw are returned to the soil, only the carbon element is lost. Crop hygiene is improved by burning. Many weed seeds are destroyed as are disease spores on straw and on the stubble. The National Farmers Union has a code of straw burning practice which advocates a fire barrier of cultivated ground round the field perimeter.

A proportion of straw is kept either for on farm use or for sale. For convenience of handling it is baled and small rectangular bales of around half a hundredweight were the norm. During the last three or four years the big baler has been adopted. These machines speed up straw handling thus allowing the field to be prepared timeously for the next crop. Big bales can

weigh five to ten hundredweights and so have to be handled mechanically. They are square or cylindrical according to the type of baler used and their structure is such that they can be stored out of doors without undue loss of quality. Rows of such bales can be seen along field edges or on plots of waste ground and have become a new feature of our countryside.

W.D. Gill

SEVEN LOCAL FERNS

Within Edinburgh itself, there are not very many different species of ferns, which means it is not difficult to become familiar with their general characters. I propose to describe seven ferns, all of which are common almost everywhere, and easily distinguished.

A fern bears structures, known as sori, usually on the back of the frond or fern leaf. Each sorus is made up of a cluster of sporangia (capsules containing spores - minute seed-like bodies) and often has a thin membranous covering called the indusium. The size, shape and arrangement of the sori are significant in fern identification.

When the spores are ripe the sporangia burst. The spores easily blow away and begin to grow if they land on a suitable wet place. A spore does not behave like a seed for the plant which grows from it is unlike the adult fern, looking more like a thallose liverwort. It is known as the prothallus and produces both male and female cells or gametes. A film of water is necessary for fertilisation and once this has occurred the prothallus produces tiny fern-like leaves or fronds, and eventually a mature plant.

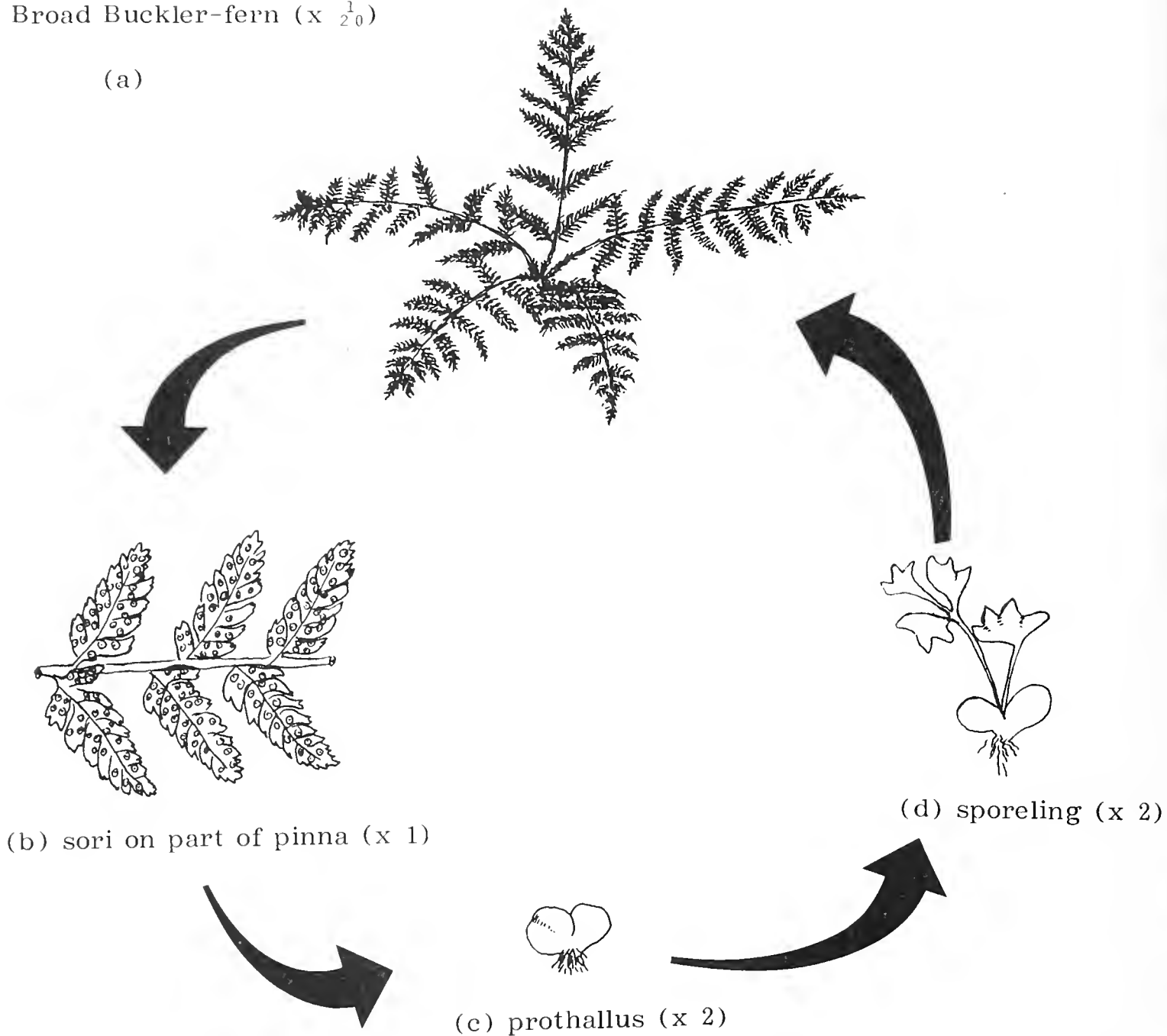
The fern illustrating the different stages is the Broad Buckler fern, *Dryopteris austriaca* (*D. dilatata*). This is a very common fern with its shuttlecock arrangement of fronds and a dark green colour. The 'stem' below the leafy part is called the stipe, the upper part of the 'stem' is the rachis. The pinnae are the parts of the frond joined on to the rachis. On this fern they are like side branches. Often each pinna divides again into smaller 'leaflets'. These are called pinnules.

The spores have the typical *Dryopteris* arrangement in the middle of the pinnules. Each sorus is rounded and covered with a kidney-shaped indusium. One final significant feature of the Broad Buckler is that the dark scales at the base of the stipe have pale edges.

The Male-fern, *Dryopteris filix-mas*, is equally common. The plant has a similar shuttlecock habit although the fronds are more upright. The pinnae have much less divided pinnules and the scales on the stipe are uniformly pale brown. This fern is usually abundantly fertile and the kidney-shaped indusia cover closely grouped sori.

These two ferns are the most likely to develop from occasional spores which grow in damp corners.

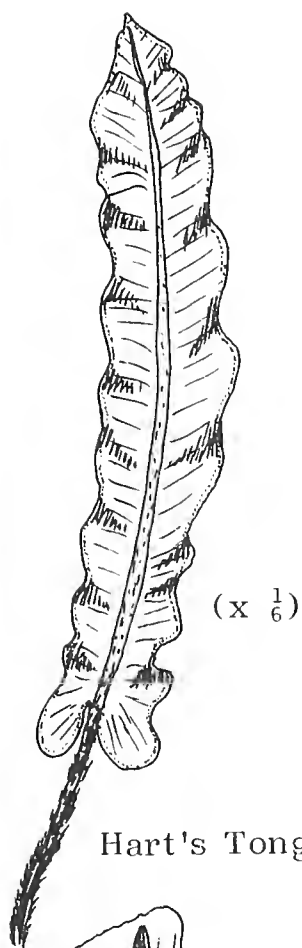
The third tall fern which looks similar, is the Lady-fern, *Athyrium filix-femina*. It differs from the Male-fern in looking more frilly and delicate.

Broad Buckler-fern ($\times \frac{1}{20}$)

The stipe and rachis are yellow-green, although sometimes purplish. The Male-fern sori are rounded, but the Lady Fern has sori which are half-moonshaped. The pinnae also continue further down towards the base of the frond than in the Male-fern, gradually decreasing in size.

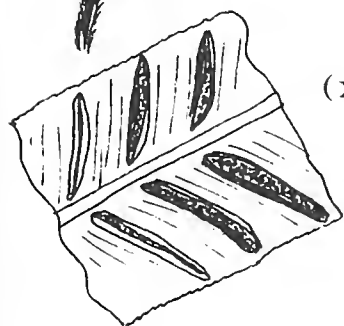
The Hart's-tongue Fern, *Phyllitis* or *Asplenium scolopendrium*, is probably familiar to most people. The thick leathery frond is simple, being completely undivided. The sori on the back of the frond are arranged in the typical linear *Asplenium* shape, and in pairs. The size of this fern is variable, depending on where it is growing.

Two other common *Aspleniums* can be found growing on walls: the Wall-rue (*Asplenium ruta-muraria*) and the Maidenhair Spleenwort (*Asplenium trichomanes*). The Wall-rue has fronds that resemble Rue (*Ruta graveolens*) and are dark green and leathery. The pinnules are diamond or triangular in shape. When the indusia open along the linear sori, the sporangia spread to cover the whole of the back of the frond. The Maidenhair Spleenwort has



(x $\frac{1}{6}$)

Hart's Tongue

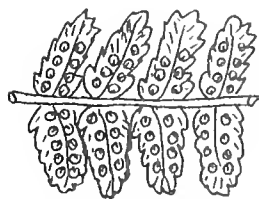


(x $\frac{3}{4}$)



(x $\frac{1}{9}$)

Male-fern

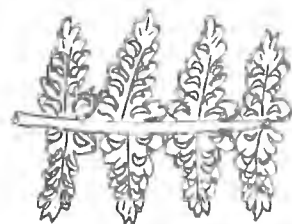


part of pinna (x 1)

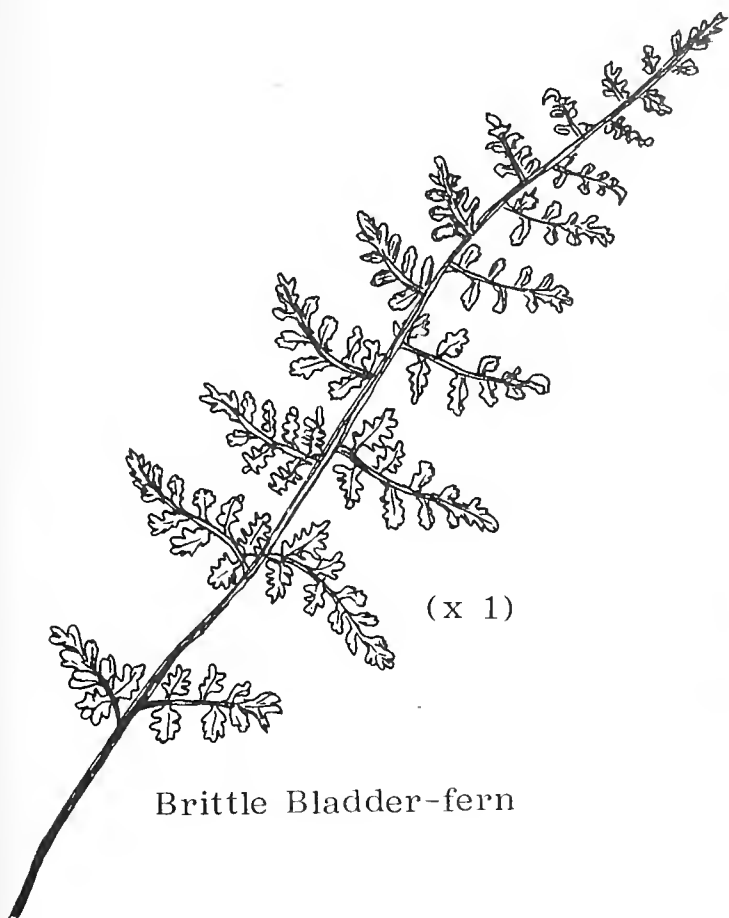


(x $\frac{1}{7}$)

Lady-fern



(x $1\frac{1}{2}$)



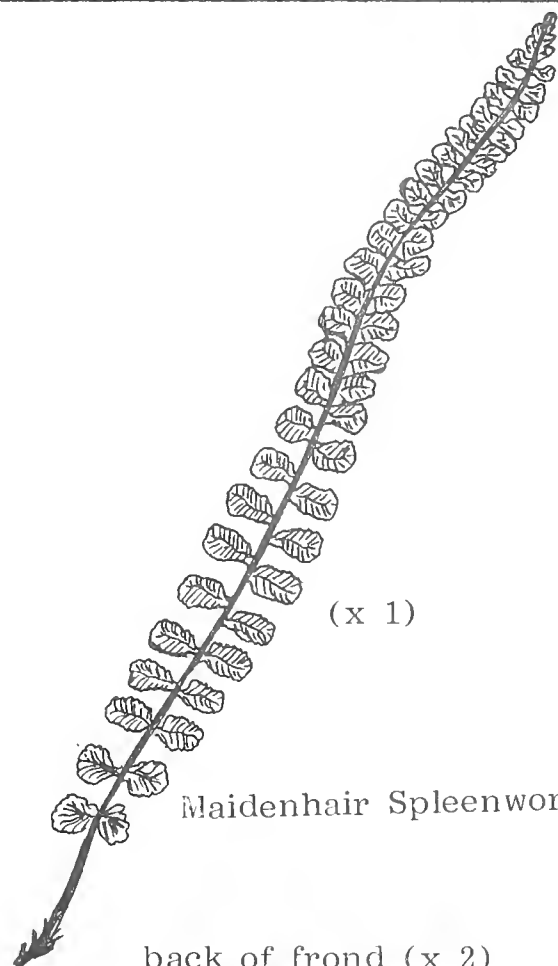
(x 1)

Brittle Bladder-fern



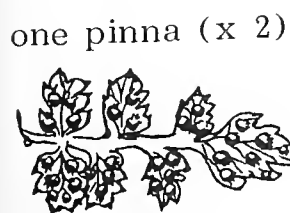
(x 1)

Wall-rue

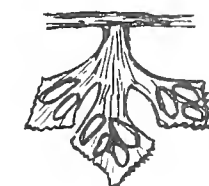


(x 1)

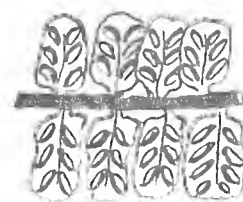
Maidenhair Spleenwort



one pinna (x 2)



one pinna (x 2)



back of frond (x 2)

a black stipe, and rachis with rather oblong pinnae. The sori are beautifully arranged on the back of each pinna along the veins.

Another attractive wall fern is the Brittle Bladder-fern, *Cystopteris fragilis*. Any possibility of confusing this with a young *Dryopteris* is removed by looking at the back of the frond and seeing an abundance of sori. The immature indusium is white and swollen like a bladder. Later it bends back to reveal the black sporangia. The fronds are very delicate and not unlike a young Broad Buckler in shape.

All of these ferns can be grown quite readily from spores, which is the best way to obtain plants. The spores should be thinly scattered on a sterilised potting mixture in a clay pot. The pot should stand in water and be covered with glass or plastic, to maintain the humidity and keep other spores out. The prothalli usually appear within two to five weeks and must be sprayed with water at intervals until the first fronds grow after one to three months. After about a year the plants should be pricked out into individual pots in the appropriate kind of soil.

H. McHaffie

WILDLIFE FROM A SUBURBAN GARDEN

How lucky we are to live on the south side of the city with the woods and fields of the Prestonfield estate to the rear of us.

The trees, mostly mature beech, sycamore and elm with the odd horse-chestnut and conifer are shelter for numerous birds and animals.

Apart from the usual blackbirds, robins, chaffinches and song and mistle thrushes and wrens, from our window we have seen tree creepers in the nearby sycamore tree and redwings and greater spotted woodpeckers have visited our bird table from time to time raiding the peanuts put out for the tit family.

The green woodpecker had been elusive, plaguing us with his 'laughter' in the spring for years with never a sighting, until this year when he visited the horse-chestnut tree at the bottom of our neighbour's garden.

This spring also, I was woken just after dawn by a strange noise outside our bedroom window. It proved to be two magpies, one male and one female. The male was dancing in circles round the female making chuckling noises. Later the same week I heard the noise again, but from the middle of the lawn this time. The same performance was then followed by mating, after which the birds flew away. Still on magpies, one day while in the garden I heard a fluttering of wings and looked up to see at least twelve magpies flying overhead and watched them disappear into the trees away to the west.

One cold winter's morning we saw a male and a female pheasant in the garden and last autumn a covey of partridge visited us. I was at the window and saw a bird poke its head under the fence and take a good look round. It saw that all was well and decided to come into the garden. Imagine my

surprise when it was followed by eight other partridges! They all pecked around on the lawn for a while and then visited my neighbour's garden. After about half an hour they all tramped back again through the fence in the same orderly manner.

From time to time at dusk we see hedgehogs emerging from wherever they sleep, to find food in the nearby wood. We found one hibernating under our red-hot poker plant one year. Last winter we found an immature hedgehog in the driveway and put out a saucer of milk for him, which he didn't seem to see but could obviously smell. He raised his wee snout in the air and followed it until he found the saucer. He drank politely at first and then decided to be a hedge-'pig', as he is sometimes known, and stood all four feet in the saucer and drank from there. When he had finished we put him over the fence into the wood and he was last seen heading north at a fast rate of knots.

Oh yes, and squirrels - I musn't forget the squirrels - dear little, charming beasts who stand up on their hind legs at our french window and look so pleadingly at us for food; which raid our bird-table, no matter what obstructions we put in their way; and which, this summer, have dug up and eaten all the crocus bulbs from our front garden!

They won't be chased away and two of them keep me busy at the front garden while a third is robbing us of our gooseberries at the side of the house!

On 1st January, 1981, we observed twelve to fourteen squirrels chasing round and round a couple of nearby trees for nearly the whole day. Presumably they were deciding on territory and which would get which for a mate and also which would get to eat the best crocuses!

B. Gill

EPITAPH FOR THE 'OLD SHAFTS'

Erratum: In the 1978 Journal, page 28, after "Addiewell Ponds", the next entry should read, "'Old Shafts', 1.6 km east of Seafield, West Lothian".

Anyone now looking for these 'Old Shafts', even given the grid reference, NT 021661, would find only a farmer's field with perhaps some grass circles coloured differently from the rest, for these 'Old Shafts' which we found in 1977, alas are no more.

In 1976 one of us (TWB) indicated that there were hollows high up above the River Almond, in a field he could see from the bus travelling to Seafield, West Lothian. To our delight on investigation the hollows turned out to be a series of over 50 tiny ponds occupying an area of about 150 by 300 metres at one end of a farmer's field. They looked like bomb craters but local people told us they were caused by subsidence due to mine workings below. The one-inch O.S. map indicates them as 'Old Shafts'.

A few were dry; some had shallow water and others were very deep with no aquatic vegetation growing in the centre; all were fairly steep-sided.

They were mostly circular with sometimes two circles joined together like a pair of spectacles. The water surface varied from 1 to 5 metres across. Some were almost completely overgrown with rushes. Others had little emergent vegetation but lots of Canadian Pondweed (*Elodea canadensis*) and Broad-leaved Pondweed (*Potamogeton natans*). One had Flote-grass (*Glyceria fluitans*) while another had Branched Bur-reed (*Sparganium erectum*). They were all different and all teeming with life. In the few visits we made we managed to collect some data. The following selection will, hopefully, convey some idea of the richness of these ponds.

Down in the hollows, the water surface was seldom ruffled by the wind and so we were able to watch fascinated as several large rounded Water Beetles (*Acilius sulcatus*) bobbed up to the surface, tail first, to collect air. Great Crested Newts (*Triturus cristatus*) periodically swam up from the depths for the same purpose and rapidly disappeared again whenever a pond-net was wielded. The other two British species of newts were also present. Some of the ponds with emergent vegetation had Damselflies: red ones, blue ones and black ones with blue beacons on their tails. One pond had Minnows (*Phoxinus phoxinus*) apparently attempting to spawn in the shingle at the edge. The widely distributed but seldom seen alga, *Volvox* sp, a ball of cells rotating through the water, was found on one occasion. Five other species of algae were collected the same day. Toads spawned in several of the ponds. The shallowest water at the edge 'boiled' with seething masses of tadpoles. All together, like a well-trained corps de ballet, Pond Skaters (*Gerris lacustris*) dashed across the surface to the far side of the pond at our approach.

There were Greater Water Boatmen (*Notonecta glauca*) and four different species of Lesser Water Boatmen (*Corixa* spp) rowing their way through the water. There were Mayflies, Caddis flies, Alder flies, Phantom larvae, Cladocerans of several species, Bivalves and so the list goes on. Fourteen species of Water Beetles including *Stictometes lepidus*, which is uncommon in Scotland, had already been identified and we were looking forward to a visit by a water-beetle expert who would certainly have found many more species. Our last visit was in May 1981. In June we learned the ponds had all been filled in.

How easily and rapidly with earth-moving machinery can man at one stroke utterly destroy a rich and varied aquatic environment. The farmer is not to blame. He would simply be improving the land by increasing his grazing acreage. It is easy with hindsight to say, "If only we'd contacted the farmer", or, "If only we'd hurried our surveys and tried to persuade some conservation organisation to purchase that bit of land as a reserve". If only ...!

We will not see the like of these ponds again.

T.W. Boyd
E. Gillespie
E.M. Smith

SOME NOTES ON NATURAL HISTORY

A Stoat in a garden at Gullane

On 12th January, I saw a Stoat in winter dress in my garden. A few days later I saw it again. Then I saw it no more until 7th February when it was racing about my back yard and finally disappeared down a hole underneath my garage. It was entirely white except for the tip of its tail which was dark brown. If he has taken up residence under my garage he is welcome to stay. I rather liked his cheeky little white head peeping out at me from his entrance hole.

I wonder if this is unusual. This Stoat was quite near the house on all three occasions: in an enclosed paved area, bounded by the garage, two walls of the house and a thick privet hedge, and we are at sea level in Gullane.

In the future I shall have to be very careful where I put the bird food. I have not noticed any casualties up-to-date.

M. Woods

The sleepers

Late in the afternoon of 15th June 1981, when the sun was shining and bringing needed warmth to the land, I spied a Grey Squirrel on the ground, in the policies of Hopetoun House. I froze and watched as the animal came nearer. It found a nut (?) and sat and ate. Its continued ramblings brought it nearer to me and into the sunshine. Then it stopped and rested, not in an alert position, but sinking down as though enjoying the warmth. Its eyes closed and opened several times but within a minute or so it was fast asleep. Gently I approached to within, say, one metre. From time to time the eye nearest to me opened, then the head nodded and sleep prevailed.

I then took a liberty; using my stick I touched its fur. The reaction was positive: in one bound it was nearly two metres away, fixing me with what I can only describe as a look of deep-felt injury.

Still undecided whether it was injured or partly poisoned I moved towards it. It ran past me and vanished. Perhaps one day I may catch a weasel sleeping.

Two months later, on 23rd August 1981, at Traquair House about 4 pm, with a friend, Mr. R.M. Strathdee, I found a half-grown hedgehog fast asleep in the open curled upon the grass. My friend has a good slide of the animal, taken three-quarters of an hour after first finding him.

C.P. Rawcliffe

Woodcock breeding at Hopetoun

On 26th June, 1981, J. Carlyle reported in the Nature Trail log that he had seen a Woodcock near Post No. 3, suspected breeding, but that he had been unable to find a nest. After the groundsmen had cut the rank undergrowth not far from this post, I found broken egg shells, since identified as woodcock, lying on old oak leaves only a few yards from the path.

C.P. Rawcliffe

Pied Flycatcher's courtship display, 18th May

In an old birch wood in the upper Tyne valley in Midlothian a male Pied Flycatcher was seen perched motionless and upright on the bare branch of an ash. Conditions for observation were good, the day being sunny, warm and clear with only a south-easterly breeze occasionally stirring the tree tops and in the ensuing hour and a half some interesting courtship display was noted.

The observers had been drawn to this particular spot on hearing the characteristic song, a somewhat hesitant repetition of one note followed by a more trilling finish. Despite the male distinctive black and white plumage it took a little time to locate the bird.

The cock then flew to a lower branch of the ash, perched briefly, tail depressed - doubtless to aid balance - at the entrance to a hole some twelve feet from the ground. It entered, re-emerged promptly and flew to an adjacent twig to sit erect and stiffly upright, thus displaying the brilliantly white breast to advantage. Then the hen, a little mousy brown bird with a narrow whitish wing bar, appeared bearing a few strands of dry grass or fibrous material in her beak. She flew to the hole, perched briefly on the threshold before entering, to re-emerge - without the nesting material - and perch on the convenient strong twig adjacent to the nesthole. There she was joined by the cock which again took up its erect posture straight as an owl. This series of actions was repeated three times; the fourth and fifth times the hen preceded the cock; on re-emergence, the cock leading, male display followed but no song.

There took place now what appeared to be a courtship flight when both birds flew rapidly, one close behind the other - but which led, cock or hen was not clear. They wove in and out of the tree trunks and round the holly bushes, their flickering wings glinting when caught by the midday sunlight. The chase was made in about a forty yard radius from the nest tree, in silence. When the flight ended after a few minutes, the cock bird sang again from the small branch of the ash.

E. Hamilton
E. Landells

Young Cuckoo's interesting food

A young Cuckoo was present in a garden at Ford, Midlothian over a period of some four weeks from the beginning of August until 8th September.

During this time the young bird frequently visited a wild grass grown area in the garden where it was observed walking clumsily on the ground and feeding; but not until the foraging bird had been observed closely through binoculars from about ten yards was it possible to identify the obviously plentiful food supply. The young bird was eating the numerous very small toads and frogs present in the uncut grass. When not feeding, the bird would perch on nearby trees, fence posts and on a fallen tree trunk, preening or resting. It rarely flew from the garden and was last seen on 8th September, when, after a week of warmth and sunshine, there was a change to cooler weather.

D. McDougall
(by letter to
E. Hamilton, 12.11.81)

Dragonfly behaviour

Unlikely places can produce good observations as we found on 28th August 1981. A small piece of water surrounded by rushes and willows, alongside a bing, in West Lothian gave some very pleasant watching of the dragonfly, *Aeshna juncea*. Whilst searching for pond skaters etc, we noticed and then watched a male patrolling the water and adjacent rushes, possibly in search of a female for we saw no evidence of feeding. The male is about 7 cm long and is brown and blue in flight, though the blue seems to show up better.

After a few minutes a female, looking decidedly green and brown, appeared. The male darted to her but was abruptly repulsed. The reason was soon apparent - she was egg-laying. Every now and then she settled on low vegetation and lowered her abdomen into the water. At this stage she was most likely seeking a suitable spot to receive the eggs. There followed a pumping action and this one assumed was the actual process of egg-laying. She ranged up and down choosing various sites, all very much alike in being low, emergent vegetation.

The male ignored her. His behaviour was different when a second male came to the pond. There was a dash, a tangled movement of bright blue bodies, the audible clashing of wings and then one fled.

In flight the male carried the abdomen horizontally, but the female's hinder end drooped slightly, as though weighed down with eggs.

E. Gillespie
C.P. Rawcliffe

A wreck of Lumpsuckers?

For several years we have been keeping an eye on the tide-line at Tynninghame Estuary for dead fish. One fish we have noted very irregularly is the Lumpsucker, *Cyclopterus lumpus*, a round, deep-bodied, heavy-headed fish with a knobbly skin and no scales, and a very obvious ventral 'sucker'. The fish is often six inches to one foot long but may be as much as two feet. It spawns inshore just below the low-tide mark in spring laying vast numbers

of eggs on the stones and weeds. The larger female is yellowish or bluish and the smaller male is tinged with red. He stands guard over the eggs and anchors himself to a stone with his immensely powerful sucker. This is a period of great risk to the Lump-suckers as they fall easy prey to birds and seals. Spring storms may tear them from their hold on the rocks and throw them up on the beach. In 1981 we found a dead one on 4th April and several on the 19th. By 3rd May there were at least 60 carcasses in the bay behind St. Baldred's Cradle and the Ranger reported even more in the bay at West Barns. Most of these were just head and skin but there were some complete bodies. On all visits we noticed several Grey Seals offshore toying with and eating fish that may well have been this species. During this period there were a lot of onshore winds including some strong north-easterlies. Why were there so many dead fish this year? Were there more fish or more Grey Seals? Were the seals killing healthy or diseased fish? Did the north-east winds contribute to the carnage? How little we know of undersea life even a hundred yards offshore.

R.W.J. Smith

Hairy caterpillars

Every year during May we see some large Garden Tiger Moth (*Arctia caja*) caterpillars in the John Muir Country Park at Tynninghame. This year we saw what we took to be the same, but the date was 27th September. Stepping aside from the short grass path where they were so obvious on to the adjoining heathery slopes where they were equally obvious, we realised the caterpillars were in large numbers. They were very big, about two and a half inches in length, and were lying fully exposed, feeding on the heather. Three of us separately counted the number we could see within different small sample areas and reached the staggering conclusion that there were well over 1000 of these very large hairy caterpillars on the moor just behind St. Baldred's Cradle.

Back home, Tom Boyd checked up on Tiger Moths. The books said that Garden Tiger caterpillars hibernate in autumn when they are very tiny. Also the fully grown caterpillars, just before they pupate in May, are up to one and three quarter inches long. Ours were approaching hibernation but were much bigger than even full-sized Garden Tiger caterpillars.

A fortnight later we were voicing our doubts about our somewhat casual identification. On the same day we found on the south side of the Tyne estuary another caterpillar, a much smaller one with black and gold banding. More thumbing through the books followed and a fortnight later, by which time no caterpillars were displaying themselves, we were studying a photograph which Tom Boyd had taken at Tynninghame of a Garden Tiger caterpillar on 11th May 1980. We ruefully concluded it was different. Our 'beasts' were certainly not Garden Tigers. Our big ones were not only bigger but their hairs were shorter and their colouring, as we remember it, was dark brown with rusty brown at the sides. Tom Boyd then turned up trumps with a description which matched both our small-sized and our large caterpillar, the time of year, and the food plant. It is a common and widely distributed moth, the Fox Moth (*Macrothylacia rubi*). It hibernates as a full grown larva, appears again in spring and pupates without feeding, emerging in May as a moth. Hopefully we will clinch the identification next spring.

E.M. Smith

Royal Fern (*Osmunda regalis*)

In July, I found the Royal Fern near Scourie, Sutherland - map reference NC 165467. It was growing on a wet rocky outcrop on the north shore of Lochan Phol Drolloch (three lochans in a chain, centre lochan). The exact location of the lochan may be checked with Mr. G.B. Mackay, Secretary of Scourie and District Angling Association, 3 Park Terrace, Scourie.

D. Flint

Note: The Royal Fern is a native being found in damp places in the western part of Britain. It was once quite common, but as a result of drainage and collecting has become relatively rare. It is often cultivated in gardens for its beautiful stately appearance and there is a fine specimen of it in a plot on the grass in front of the House of Hermitage of Braid. It is a fern which has both fertile and sterile fronds. The former are distinctive as their upper pinnae, which are reduced to midribs, are covered with clusters of reddish-brown sporangia.

Fungi in the policies at Hopetoun

There have now been 155 fungi recorded in the 100 acres around Hopetoun House. We hope to add to these when the list of fungi comes from the Botanical Society who visited the grounds recently.

Two fungi of interest come to mind:

Cordyceps militaris (Scarlet Caterpillar Fungus)

This is a parasitic fungus which is found amongst grass and appears above the ground as a reddish-orange club two to three centimetres in height. If the club is traced into the soil it will be found to be growing from a dead larva or pupa of a moth or butterfly. It usually issues from behind the head of the host.

Cordyceps ophioglossoides (Snake Tongue Club Fungus)

The fruiting body of this fungus like that of *C. Militaris*, is club-shaped with an olive-black head and yellowish stipe three to ten centimetres high. It is parasitic on *Elaphomyces murica*, a false truffle found in the soil of Pine woods. The truffle is globose, hard, yellow-brown and warty.

Both these fungi and truffle were seen in September 1980.

In September 1980 hundreds of fungal fruiting bodies were seen, but at the same time this September only very few. At the time of writing, 10th September, only the fruiting bodies of *Inocybe geophylla*, *Inocybe geophylla* var. *ilacina* and *Bolbitius vitellinus* had been seen.

The help and assistance given by Dr. Roy Watling in identifying many of the fungi at Hopetoun is much appreciated.

J. Carlyle

Some interesting plants found growing in Midlothian, 1981

1. Solomon's Seal (*Polygonatum multiflorum*)

7.5.81 - 45-50 plants seen, not yet in flower, at Arniston on the bank of the South Esk (map reference NT 330621 - under hawthorn bush to west of track).

2. Monkshood (*Aconitum napellus*) (Wolfsbane)

(a) 13.5.81 - Vigorous patch of plants noted, with deeply fringed leaves, about eight inches high, in Roslin Glen near right of way (NT 278693).

(b) 15.5.81 - Similar patch found at the Tynehead end of Maggie Bowie's Glen, near Borthwick (approximately NT 390602).

3. Fragrant Orchid (*Gymnadenia conopsea*)

9.7.81 - One plant found in flower in the Middleton area, some 20 in bud. Rich fragrance very marked and identification was confirmed. Evidence of nibbling presumably by rabbits.

12.8.81 - Return visit to site showed 30+ flower heads partially faded but recognisably colourful and fragrant at the tips (NT 344576 - Middleton North Burn, Esperston).

Save for 3, the above listed sites are mentioned in "The Field-Club Flora of the Lothians", edited by Isa H. Martin.

E. Hamilton

Note: According to Clapham Tutin and Warburg, *Polygonatum multiflorum* is naturalised in Scotland. The garden Solomon's Seal is a hybrid (*P. multiflorum* x *odoratum* = *Px hybridum*).

OBSERVATIONS MADE BY MEMBERS DURING 1981

- 21.1.81 Sparrowhawk takes Blue Tit in mid-air, Hopetoun foreshore (J.C.)
- 14.2.81 Snowdrops flowering in profusion near Midhope Bridge and on the banks of Midhope Burn, near Hopetoun. (S.L.)
- 15.3.81 Small pond near Preston House teeming with croaking and breeding frogs. (E.F.)
- 27.3.81 Bat flying at noon, Hopetoun Wood. (J.C.)
- 5.4.81 Female Greater Spotted Woodpecker observed (and heard - pecking and calling) in Crichton Glen area, alongside a Treecreeper (which inevitably took second-place to the more exotically plumed woodpecker). (D.O. and A-M.G.)
- 26.4.81 Male and female plants of Butterbur (*Petasites hybridus*) seen in flower at West Barns (Dunbar). (E.H.J.)

27. 5.81 On the evening outing to Cramond two Herons seen on the edge of Drum Sands - not seen before at this location. Also four Gannets were flying close to the tide edge. (G.R.)
28. 5.81 A Roe Deer seen amongst the whin on Blackford Hill, near the Hermitage of Braid. (G.C.)
27. 6.81 On the circuit outing from Society, near Hopetoun, female plants of Butterbur (*Petasites hybridus*) were seen. These are rare in Scotland, there being possibly only four sites - see 26.4.81. Also seen were Great Horsetail (*Equisetum telmateia*) - local in Scotland, and Wood Horsetail (*Equisetum sylvaticum*) - not so common now as some years ago. (J.C.)
11. 7.81 On the Pentland Walk, while the party was resting on Carnethy Hill there were a large number of Swifts, very actively flying about feeding. I had never been higher than Swifts before and it was fascinating to look down on them. (C.S.)
29. 7.81 On the E.N.H.S. Walk from Cramond to Turnhouse, Giant Bellflower (*Campanula latifolia*) was seen in flower. The party noticed many Elm trees affected by Dutch Elm disease. (C.S.)
7. 8.81 Along the banks of the River Spey, many saplings freshly frayed by Roe Deer; fresh 'scrapes' at the foot of the trees also seen. A Roe buck closely following a doe watched at close quarters for several minutes both showing little fear with more important matters occupying their thoughts! (E.F.)
8. 8.81 On the approaches to the Lairig Ghru five Ptarmigan startled into flight; a bank of colourful fruiting Cloudberry (*Rubus chamaemorus*) by the Sinclair Hut, Common Wintergreen (*Pyrola minor*) in flower amongst the heather; and brick red caps of *Russula decolorans* near the iron footbridge. (E.F.)
- 16.10.81 Sparrowhawk seen feeding on a Song Thrush in a Morningside garden. After about twenty minutes it flew away over the rooftops. (N.F.H.)
- 31.10.81 On the Beecraigs outing, several groups of the late fruiting *Hygrophorus hypothejus* (Herald of the Winter) seen under Conifers. (E.F.)
- 9.12.81 Flock of Redwing feeding on a holly bush in the same Morningside garden as visited by Sparrowhawk on 16.10.81. (N.F.H.)
- 1980/81 Grasshopper Warbler frequently heard in the Crichton Glen area (and once seen, Autumn 1980, in the Borthwick railway line area). (D.O. and A-M.G.)

Some early birds, 1981

28. 2.81 Starlings with young, South Queensferry.
21. 3.81 Sand Martin over Linlithgow Loch - see report, page 34.

- 27.3.81 Male Wheatear on front lawn, Hopetoun House, going north.
 30.3.81 Rescued and handled fully fledged Song Thrush, South Queensferry.

J. Carlyle

EXCURSIONS - 1981

Key for excursions:

<i>B</i> - botany	<i>E</i> - entomology	<i>Ge</i> - geology
<i>O</i> - ornithology	<i>Ff</i> - freshwater fauna	<i>ML</i> - mosses & liverworts
<i>G</i> - general	<i>S</i> - shore	<i>f</i> - fungi

Day excursions and weekends

Leader

17 Jan	Coastal walk from Gullane	OG	Mrs. M. Wood
14 Feb	Midhope to Blackness	G	Mrs. S. Litteljohn
21 Mar	Linlithgow Loch with S.W.T.	O	Mr. C. Mylne
25 Apr	Dawyck Estate	G	Mrs. E. Farquharson
2 May	Langton Estate, Duns	G	Mrs. E. Farquharson
9 May	The Hirsell	O	Mr. R. Robson
15- 18 May	Argyll Forest Park Weekend		
23 May	Belhaven	S	Dr. S. Smith
30 May	Lammermuir Deans	BG	Mr. R. Weatherhead
6 Jun	Lochwinnoch	OG	Mr. D. Mower
7 Jun	Lamb and Fidra with S.O.C.	O	Mr. R.W.J. Smith
13 Jun	Craigleith Island with S.O.C.	O	Mr. R.W.J. Smith
13 Jun	Roslin Glen	B	Miss J. Raeburn
20 Jun	Middleton	Ge	Mr. I. Bunyan
27 Jun	Society and Hopetoun Estate	BG	Mr. J. Carlyle
4 Jul	Ben-y-Vrackie	B	Mr. J. Winham
11 Jul	Pentlands Walk	G	Mrs. H. Miller
18 Jul	Saltoun Woods	O	Mr. W. Clunie
25 Jul	Birks of Aberfeldy	B	Dr. C. Page
1 Aug	Milngavie	B	Dr. R. Begg
8 Aug	May Island	O	Miss B. Gordon
15 Aug	Peebles Circuit	G	Mr. G. Bell Mr. A. Dickson
22 Aug	Whitlaw Moss & Lindean Reservoir	B	Mr. P. Brown
29 Aug	New Lanark & Falls of Clyde	G	Mr. A. Campbell
5 Sep	Yellowcraigs to North Berwick	G	Mr. A. Mathieson

12 Sep	Glendevon Hill Walk with Dundee Naturalists	G	Miss B. Gordon
19- 21 Sep	Loch Ard Weekend		
26 Sep	Cammo Estate with Botanical Society of Edinburgh	f	Mr. M. Richardson
3 Oct	Aberlady Bay	O	Mrs. M. Wood
31 Oct	Beecraigs Country Park	G	Miss C. Dudgeon
21 Nov	Vane Farm & Lochore Meadows Country Park	OG	Miss A. McCafferty
26 Dec	Gullane Coast Walk & Sausage Sizzle		

Evening excursions

6 May	Dean Village	ML	Miss H. McHaffie
13 May	Roslin Glen	O	Mrs. E. Hamilton
20 May	Corstorphine Woods	G	Mr. C. Rawcliffe
27 May	Cramond	G	Mr. G. Reynolds
3 Jun	Straiton	Ff	Mrs. E. Gillespie Mrs. E. Smith
17 Jun	Red Moss, Balerno	E	Mr. A.D. Liston
24 Jun	Royal Botanic Garden	B	
1 Jul	Duddingston	O	Miss M. Mowat
8 Jul	Union Canal	G	Miss B. Gordon
15 Jul	Gallachlaw	G	Mrs. E. Farquharson
22 Jul	Balerno Circuit (cancelled)	G	Miss M. Abel
29 Jul	Cramond Brig to Turnhouse	G	Mrs. C. Stewart
5 Aug	Blackford	G	Miss E. O'Donnell

REPORTS AND EXTRACTS FROM REPORTS

Coastal Walk at Yellowcraig, Dirleton - 17th January 1981

Three inches of snow had fallen but gradually melted during the day. In the morning we looked at the plantation of Scots Pine and Corsican Pine on the nature trail and saw one surviving specimen of Western Hemlock. We then walked through the older woodland of deciduous trees. Surprisingly few birds were to be seen. On the seaward edge of the woodland we saw thickets of Wild Privet and Scots Pine trees much affected by the wind. Some were growing almost horizontally. We then walked to the sand dunes and noted the Marram-grass planted to conserve the dunes. On the walk back to the car park beside the plantation of Sea Buckthorn we did see some birds - Robin, Fieldfare, Bullfinch, Greenfinch, Chaffinch, Blue Tit, Mistle Thrush, Song Thrush; also a Kestrel over the car park.

In the afternoon the walk along the shore was pleasantly invigorating and we saw Pied Wagtail, Purple Sandpiper, Golden Plover, Grey Plover, Turnstone, Ringed Plover, Oyster Catcher, Redshank, Dunlin and Scoter. There was nothing of outstanding interest, but we enjoyed it and it helped to keep our eyes in!

C.M. Wood

Linlithgow Loch - a joint outing with the Scottish Wildlife Trust -
21st March 1981

On a somewhat damp morning 50 members of the E.N.H.S. and S.W.T. met at the Town Hall car park, Linlithgow and were introduced to their leader, Mr. Chris Mylne. We were meeting Chris Mylne on his own ground and it followed naturally that the bird to hold our attention for most of the day would be the magnificent Great Crested Grebe and in particular we were to concentrate on the intricate display pattern of this species.

Before starting our walk round the loch we were taken to the Borough Hall for a twenty-minute show of slides which gave us a good insight into the birds we were likely to see on our visit and the display sequence of the Grebe - this short indoor session was an excellent idea for it prepared us well for our walk and also kept us dry when the rain was at its heaviest. Good organisation!

We walked through Fidler's Croft and then on the path along the north shore. We were shown the Cormorants (12 in number) perched on the bare branches of one of the island trees. Examination of the stomach contents of some of the less fortunate brothers of these Linlithgow Cormorants showed they consumed mainly sticklebacks and only very few trout.

The best area for observing Grebe display is the reed bed at the north-west corner and this was to be our lunch venue. As will be explained the Grebes performed well but it is worth recording that a really unexpected additional lunchtime highlight was a sighting of a remarkably early Sand Martin hawking (hopefully) over the reed bed. A Sand Martin on the 21st March!

But now for a lengthy look at the Grebes while we sipped our soup and coffee. The sun shone on the reed bed and the surrounding water and we witnessed excellent displays. The sequence is complex but Chris Mylne's excellent running commentary and accurate forecasting - for he seemed to know exactly what the birds were going to do next - proved most helpful to us.

The sequence starts with head shaking between a pair followed by mock preening, then one bird swims away, turns, and assumes the characteristic cat posture with wings curved and the ruff extended. The other bird then dives and emerges alongside the 'cat' bird with wings closed and clearly showing its white underparts - this bird has thus performed the aptly named 'Ghostly Penguin' display. The final part of the sequence is the weed dance in which both birds of a pair (after preliminary display) dive and bring up weed in their bills and then 'dance'.

We soon learnt, however, that for the sequence to be maintained both birds had to be interested parties and Chris Mylne warned us on numerous occasions as we watched that 'nothing more is going to happen here' but we also heard him say several times, 'now this is really high intensity and looks very hopeful'. And many pairs were hopeful for we saw a large number of 'cat' displays and at least three of the less frequent 'ghostly penguin' displays. We did not, however, witness the ultimate - the weed dance but we almost did; one bird dived and an excited Chris shouted that a weed dance was 'on' - the bird obliged by surfacing seconds later with the promised weed but sadly for us (and more sadly for the grebe) his mate moved away - no dive, no weed, just total disillusionment!

During the displays the Grebe were in good and varied voice and the several pairs of Little Grebe, Coot, Moorhen and Mallard added their voices to a good reed bed chorus.

Not surprisingly, with Chris Mylne as our leader we returned home happy and much better versed in the ways and love life of the Great Crested Grebe.

C. Pountain

Outing to Dawyck Estate - 25th April 1981

Owing to weather conditions this outing turned into a walk through deep snow with no natural history.

Snow blizzards had been continuous the previous day and further snow fell until midday, Saturday. However, roads remained relatively clear.

The Arboretum is now managed by the Royal Botanic Garden. Our visit, being rather early in the season, found the area rather lacking in notices and with the paths lost in deep drifted snow. Attempts to use books when identifying trees were thwarted by falls of wet snow from the branches above.

Rhododendron blossom was badly damaged by the weight of snow and most of the blooms had been frosted. Daffodils lay completely submerged under snow all morning but were re-appearing by the time every one left in the early afternoon.

E. Farquharson

Outing to Langton Estate, Duns - 2nd May 1981

Langton Estate, on the outskirts of Duns, came into the ownership of timber merchants when the house fell into disuse. Wrought iron entrance gates have now gone and a sawmill stands on the site of the demolished house.

Surrounding the sawmill are commercial plantations of conifers with the occasional ornamental tree or shrub as a reminder of the grounds and gardens as they used to be.

From the sawmill we followed the line of the Langton Burn through old established deciduous woodland just coming into leaf, glad of the shelter from a bitingly cold wind. The typical woodland herbaceous plants were already in flower, including Primrose (*Primula vulgaris*), Common Dog Violet (*Viola riviniana*), Wood Sorrel (*Oxalis acetosella*), Dog's Mercury (*Mercurialis perennis*) and in damp parts, the moisture-loving Golden Saxifrage (*Chrysosplenium oppositifolium*).

In the afternoon we followed the road up to the farm of Raecleughhead and with the permission of Mr. Robert Tait, spent some time walking over the site of the hill fort on his land.

A mile further on we joined the Longformacus to Duns road on Hardens Hill by Langton Edge wood, finishing with a three-mile downhill walk back to the cars at the main entrance.

We are grateful to Mr. W.H. Tait, Langton Kennels, for allowing the Society to walk through the grounds of the Estate.

E. Farquharson

Outing to study mosses and liverworts in the Dean Village - 6th May 1981

On the 6th May a group of us examined the mosses and liverworts in the area beneath the Dean Bridge.

We looked first at mosses growing on the mortar on drier walls. Particularly common was *Tortula muralis* with upright capsules and long thin hair points on the leaves. We contrasted this moss with others and saw differences in the shapes of the leaves and capsules. *Tortula muralis* having a low tufted habit is an acrocarpous moss. We compared it with pleurocarpous mosses which have spreading branches.

Down by the river on damp rocks we found two thallose liverworts - liverworts not differentiated into stem and leaves. The smaller one was *Lunularia cruciata* with half-moon shaped 'cups' containing gemmae for vegetative reproduction, and the much more robust *Conocephalum conicum* with its distinctive scent when crushed.

Near the river and on damp walls we found several different species of *Mnium*, very attractive mosses with characteristic translucent leaves.

We found a leafy liverwort with nerveless leaves and a fleshy seta with a rounded capsule, quite unlike the more complicated moss capsules we had examined earlier.

In several places we noted a faint green filamentous mat on the bare earth. This is the first stage of new mosses, growing from spores, before the leaves are produced.

Altogether we saw twenty-four different species of mosses and liverworts along the short section beneath the Dean Bridge. The list is lodged with the Records Secretary.

H. McHaffie

Argyll Forest Park Weekend - 15-19th May 1981

On Saturday morning the party met at the Younger Botanic Garden which is maintained by the Department of Agriculture and Fisheries. We were welcomed by Mr. Gordon Rothers, one of the instructors at Benmore House which is run as an Outdoor Training Centre for Lothian school-children. During a week's stay the children take part in canoeing, hillwalking with map and compass, basic rock climbing, with botany, geology and birdwatching included.

After a tour of the building we followed a zigzag trail up through the trees to a magnificent viewpoint overlooking the Firth of Clyde. The trees were of tremendous variety and all the stands were named. The route back to the house led through the formal gardens and close by a majestic avenue of Redwoods.

In the afternoon in steady rain, Mr. Rothers led us up Glen Masson and by the River Echaig. As well as much of botanical interest, Dipper, Buzzard and Heron were seen. At the Falls of Masson the rush of water has scooped out deep potholes and a stone archway.

On Sunday the Kilmun Arboretum was visited in sunshine. Many of the conifers had been planted around 1880. The rock formations in the area were of particular interest. In the afternoon we had a four-mile walk from the Benmore car park, taking in Puck's Glen. From one of the many viewpoints two American submarines could be seen.

In the early evening we all enjoyed the beautiful scenery of Loch Eck and Loch Fyne as we drove to the head of Loch Long, where some stayed for two nights at the modern Youth Hostel at Ardgarten, and others went to guest houses in Arrochar.

On Monday morning we met at Ardgarten Forest Office and all walked south on a forest road for a mile or so until a path from the west joined it. The Forest Guide leaflet informed us that this path was for "experienced hill walkers", so three or four took off and had a delightful walk up Coileasan Glen and on to the watershed at about 500 m and then down to Lochgoilhead by the side of the loch, a distance of 10 miles or so.

The rest of the group ambled back to the Forest Office and had some peaceful botanising in mild weather. In the afternoon they did valuable work by driving round to Lochgoilhead to bring the walkers back for their evening meals.

On Tuesday morning heavy rain stopped us from exploring other parts of the forest and some people decided to go straight home. Two car loads were optimistic about the weather and made a detour by Drymen and Callender and were able to finish the weekend with a high-level picnic in sunshine, and a walk to the Bracklinn Falls.

G. Good
H. Miller

Outing to Corstorphine Wood - 20th May 1981

On 20th May a small party of 7 members and a leader met in Craigcrook Road at 6.30 p.m. for a short walk through Corstorphine Wood. The weather was dull with total cloud cover; a light easterly wind brought haar, and, near the end of the walk two hours later, a light rain. We went north on the low path, uphill to the old quarry and tip, south on the main high path and eventually downhill back to the low path.

Amongst the birds nothing of particular note was recorded in the wood, but a heron was seen flying over. Despite the inclemency, song was heard from nine common species, but the Great Spotted Woodpecker heard drumming on the 18th remained silent.

Most attention was paid to ground level plants, and despite the generally degraded condition of the wood some 35 species were recorded after hard searching. Included was a small patch of Pink Purslane (*Montia sibirica*) and Lords-and-ladies (*Arum maculatum*).

Use was made of hand lenses to introduce people to the wider world of, "small is beautiful".

C.P. Rawcliffe

Outing to Dunbar - 23rd May 1981

This outing was to the shore between the Belhaven Burn and Dunbar, to study Marine Biology. It was led by Dr. Shelagh Smith and members were joined by enthusiasts from Dunbar, including the Warden of John Muir Country Park.

Dr. Smith writes,

"The brackish sands and rocks beside the Belhaven Burn were investigated first, the most obvious species being shore crabs, winkles, mussels, cockles and lugworms (casts) and rather scanty seaweeds.

"Most time was spent on the rocky shore beyond the point, where there is a wide fairly flat rock platform with pools on the upper and middle shore and gullies and overhangs near low water mark. Much of the lower shore was well-covered with seaweed, more than has been observed in previous years, and there were more animals and more species of animals found than has been the case recently. The tide was nearly out on our arrival, therefore the lowest part of the shore was looked at first. At several places weeds were turned aside and boulders overturned (and turned back again afterwards) to see what was sheltering beneath. Later the rock pools were investigated.

"The list of species, with notes, is lodged with the Records Secretary. It includes 16 seaweeds, over 35 molluscs, over 10 crustaceans as well as representatives of other animal groups."

S. Smith

Outing to Straiton Pond - 3rd June 1981

Straiton Pond is an old gravel pit, with deep water in the centre and a reasonable amount of emergent vegetation. A party of nine members were shown some of its mysteries by Mrs. Betty Smith.

There were many Damselfly larvae swimming around and one adult was caught in flight and the party could examine it more closely. It was identified as *Enallagma cyathigerum*. Other insects examined were fast swimming larvae of the Mayfly *Cloeon*, typical of still water. Many different species of water beetle were seen and several larvae of the largest Water Beetle, *Dytiscus*, were observed aggressively attacking the other organisms in the sampling dish. These *Dytiscus* were found especially amongst the Bottle Sedge (*Carex rostrata*) growing at the edge of the pond. The Water Slater (*Gerris lacustris*) was seen running over the surface as it is well adapted to do. Two species of Water Boatmen were present.

Three species of gastropod snails were compared and *Spaerium corneum*, a bivalve snail, was found.

As in most bodies of still water the crustaceans, *Asellus* and *Gammarus*, the Water Louse and Freshwater Shrimp, were observed and also much in evidence were *Cladocera* and *Cyclops*, the smaller crustaceans.

E. Gillespie

Excursion to Lochwinnoch - 6th June 1981

Planned as a bus excursion, there were insufficient numbers to hire, so four or five cars were used. Overcast at first, the heavy showers held off until the cars were leaving, and the afternoon was sunny and warm.

In the attractive Centre with its upper viewing area, the R.S.P.B. Warden told us about the Reserve. The land was cultivated until about 1962 but has now reverted to dry meadow, wet meadow, reed bed habitats, with an open channel from the south loch. The railway line restricts the reserve to the east, but the narrow strip of mature wood and diverse undergrowth is especially interesting, both botanically and ornithologically. The loch is noted for its winter wildfowl, but the Warden told us that the birds had been surprisingly unco-operative since the R.S.P.B. had taken over the lease in 1974. The large number of Whooper Swans had forsaken the reserve for, of all places, Glasgow airport, leaving six or so, while Abbotsinch could boast - or maybe deplore - 268 outsize avians! Even the nesting Great Crested Grebes were down from eleven pairs to five or six, but of these two pairs gave us a fine display at close quarters, rising up breast to breast, and head-shaking. The Warden could not take us round, but told us where to look for flowering Bird's-nest Orchid (*Neottia nidus-avis*) and this was duly found, admired and photographed.

One Sedge Warbler sang persistently in full view, but the Grasshopper Warblers for which the Reserve is noted were not heard, nor was a Water Rail glimpsed. The second hide gave an excellent view of the Black-headed Gulls, but of greater interest to some of us, a Blackcap sang in the bushes behind the hide. Further on a Garden Warbler sang for several minutes before moving on.

Although really an ornithological outing, the afternoon was dominated by botanical interest. As flower books were not being carried, one or two plants could not be immediately identified, but others were known; the two to three-foot Dame's-violet (*Hesperis matronalis*), listed as "widely naturalised", seemed far from a garden in a boggy wasteland.

It was perhaps rather a long way for a day excursion, but it is always stimulating to visit an area where climate differs from the colder, if drier east coast.

E.R. Landells

Outing to the Red Moss - 17th June 1981

Meeting at the Balerno bus terminus, we noticed several freshly emerged Ghost Swift Moths (*Hepialus humuli*) crawling on short grass. Their wings were still soft: presumably they would harden in time for the familiar 'ghostly' hovering flight performed by the males to attract mates at dusk. The larvae feed underground on the roots of a variety of plants.

Walking along the old aqueduct across the moss, we found a freshly emerged Peppered Moth (*Biston betularia*). Resting on the grass it looked very obvious, but placed on the grey lichen of a manhole cover, it was hard to spot. The adult moth is the famous example of industrial melanism. Our specimen was of the white variety. The larva feeds on birch and many other trees and shrubs.

Moving on to the moss, Janet Raeburn led us to a spot where recent peat-digging has left small areas of open peat. Round the edges of these depressions grew numbers of sundew plants (*Drosera rotundifolia*), some of which bore the remains of their insect victims (unidentifiable Diptera) on the open leaves. The bare patches are being slowly recolonised by *Sphagnum* mosses, whose progress is being monitored.

A.D. Liston

Outing to Middleton - 20th June 1981

Mr. Ian Bunyan led a party of 19 to Middleton Quarries, where he described the geology and showed us many fossils.

At the old Middleton quarry, a vast exposure of Carboniferous limestone is seen. This was deposited 330 million years ago, when what is now Britain was near the equator and this explains why the deposits contain reef corals, as reef forming corals only live in warm water. The rocks on the quarry floor are teeming with fossils of brachiopods, corals and crinoids. The limestone is overlaid with glacial deposits.

We next visited the new quarry where we were shown the 'stoop and room' type of quarrying. The limestone was removed in large quantities, but pillars were left at regular intervals to support the roof. Here, in a pile of loose boulders, we also saw marvellous fossils of *Lepidodendrons*. The present day relative of *Lepidodendron* is the Horsetail family. In carboniferous times *Lepidodendron* grew to as much as 100 feet high.

At Esperston we viewed a row of four kilns, where the limestone (calcium carbonate) was burned with coal to form calcium oxide which the farmers slaked (the process of adding water to form slaked lime), before using it as a fertiliser. One kiln held 80 cartloads of limestone to 20 cartloads of coal.

Finally, we went to the viewpoint at Wull Muir, where we stood on the line of the Southern Uplands Fault and looked over the Midland Valley to the Firth of Forth and Fife. Here we contrasted the flatness of the Carboniferous limestone scenery with the more resistant Silurian intrusive igneous rocks of the Pentlands. Behind us could be seen the Moorfoot scarp of Ordovician rock, 500 million years old.

E. Gillespie

Canal Walk - 8th July 1981

On Wednesday, 8th July - a lovely sunny evening - 15 members met at Sighthill bus terminus. The walk was along the Union Canal going westward as far as No. 12 bridge. As the group walked along the Canal bank they kept a look out for some of the old milestones which still survive. The old hedgerow of Sycamore, Wych Elm, and Hawthorn, having been neglected for many years, has now developed in some places into a line of trees of the same variety with Elder and Ash added.

At No. 12 bridge the party climbed up the bank to reach Hermiston Road and then on to Calder Road and up the Avenue of Riccarton House (now the grounds of the Heriot Watt University). This is a very fine Avenue of Lime trees. Behind the Limes is a row of Sycamores and interspersed between the two there is a good variety of other trees. Beyond the Avenue the mixed hedges of Field Maple, Hornbeam, Hawthorn and Beech make a sturdy windbreak and must give a splash of warm colour in the autumn.

The walk went up the lane running off Riccarton Mains Road, crossing the railway line, continuing along the land bordering Baberton Golf Course and Baberton Mains. The lane then swings down through the barley fields, finishing at Wester Hailes Infill. After that there was a short walk along the Canal to finish the outing.

A list of herbaceous plants, trees and birds seen on the outing is lodged with the Records Secretary.

B. Gordon

Outing to Galachlaw - 15th July 1981

In the evening, 20 members visited the little hill behind the Princess Margaret Rose Hospital, known as Galachlaw. At a height of over 500 ft above sea level and lying between Caerketton and Allermuir, two miles to the south-west, and Arthur's Seat three miles to the north-east, it has a commanding view on all sides. This could be the reason why Cromwell's Army encamped here in 1650 prior to the Battle of Dunbar.

The Law is approached through a field at the side of the Hospital, no longer used for farming. As we walked through, identifying flowering plants on the way, it was the expanse and variety of flowering grasses that attracted most attention.

The top of the hill is well-wooded with Oak, Beech, Sycamore and Wych Elm all of considerable age and mainly round the perimeter, with more recent plantings of conifers of varying ages elsewhere on the hill.

Galachlaw may not be of particular natural history interest, but it is an attractive area with easy access to other parts of the Mortonhall Estate. As development continues on three sides the relatively undisturbed nature of the Law is in danger of being lost. One can only hope that Galachlaw will be kept as a recreational asset and will not be taken over for expansion of the City.

E. Farquharson

Outing to Birks of Aberfeldy - 18th July 1981

Members joined a course group from Kindrogan Field Centre and under the leadership of Dr. C. Page made a circuit of the Birks of Aberfeldy, looking mainly for ferns. Dr. Page showed us the main features in the identification of each species and talked about the habitat where each might be found.

As ferns prefer damp, shady situations, the Birks proved an ideal hunting ground and the following species were found.

Bracken (*Pteridium aquilinum*), which likes free draining, non-calcareous sites at woodland margins. Its deep-seated creeping rhizomes make it a difficult plant to eradicate.

Male-fern (*Dryopteris filix-mas*), tolerating acid to moderately basic soils. All members of the genus *Dryopteris* have reniform sori and indusia and the tufted growth gives the characteristic shuttlecock appearance. The lanceolate fronds of the Male-fern are bluish green, each with a sparsely scaled rachis and rounded ends to the segments.

Scaly Male-fern (*Dryopteris affinis*, the new name for *Dryopteris borrieri* or *pseudomas*). This is distinguished by its yellow-green fronds and a rachis which looks quite shaggy with golden brown scales. The segments are truncated or squared off and often there is a black spot at the junction of each pinna with the rachis. This species prefers more acid ground in higher woodland or mountain scree slopes.

Broad Buckler-fern (*Dryopteris austriaca*, previously *dilatata*) is often found on rotting stumps or in peaty woodland and has a triangular frond. The scales on the rachis have a dark brown central stripe and pale margins. The fronds are much more finely divided than those of the previous two species, looking almost like a Lady-fern.

Lady-fern (*Athyrium filix-femina*) with its lacy appearance and 'J' or comma-shaped sori.

Lemon-scented or Mountain Fern (*Oreopteris limbosperma*), although some members were not convinced about the lemony smell it can be readily identified by its whitish scales, especially when young and the small round sori which are situated round the edge of the pinnae segments and do not have an indusium.

Beech Fern (*Phegopteris connectilis*) and Oak Fern (*Gymnocarpium dryopteris*), both liking damp banks in higher woodland and having creeping rhizomes with fronds at intervals forming a colony.

Hard Shield-fern (*Polystichum aculeatum*) with evergreen glossy fronds is an indicator of lime areas. Each frond segment ends in a spine and the round sori have a peltate indusium.

Brittle Bladder-fern (*Cystopteris fragilis*) is also a lime indicator, in appearance being very like a miniature Lady-fern but with rounded sori.

Green Spleenwort (*Asplenium viride*), with a green rachis is another lime lover and Maidenhair Spleenwort (*Asplenium trichomanes*) is very similar but with a dark rachis.

Common Polypody (*Polypodium vulgare*).

E.A. Pilling

Excursion to Milngavie - 1st August 1981

Starting from the reservoirs one mile north of Milngavie a throng of members walked round Mugdock Loch and environs on a perfect summer day. This area is a dilapidated estate with the ruins of a Castle once inhabited by John Graham of Claverhouse (variously called 'Bluidy Clavers' and 'Bonny Dundee') and has now passed via Sir Hugh Fraser to the ownership of Central Region. Rumours are afloat that this will result in its 'improvement' to the status of a neat tidy park. Meantime it is lush, overgrown and picturesque with a variety of native flora together with aliens which have become well-established. The Loch itself was once some 12 feet higher and there is now an area of wet and wooded carr on the north side, bounded by a rock outcrop in a vertical cliff.

Circling the Loch from east to west, we started at a gateway with a ruined lodge finding Pale Toadflax (*Linaria repens*), Welsh Poppy (*Meconopsis cambrica*) and the large yellow Stonecrop (*Sedum reflexum*) spreading into the woodland. This was followed by the sighting of a large collection of tiny frogs and four Roe Deer in the distance, together with a large stand of Common Spotted Orchid (*Dactylorhiza fuchsii*), Common Skullcap (*Scutellaria galericulata*) and a number of ferns. Emerging wet footed from here we made for high ground and lunch with a splendid view of Glasgow in one direction and the Campsie Fells in the other. We surveyed the old castle and the crumbling masonry of a later house which was hung with Fairy Foxglove (*Erinus alpinus*), Ivy-leaved Toadflax (*Cymbalaria muralis*) and other denizens. The Nettle-leaved Bellflower (*Campanula trachelium*), well-protected by Stinging Nettles (*Urtica dioica*) grows in and amongst the stonework in profusion. Below, on the edge of the Loch, the marshland contained a variety of sedges and rushes with Reedmace (*Typha latifolia*) and the true Bulrush

(*Scirpus lacustris*). Constantly attacked by irritated fishermen but forever renewing itself, the rare Least Water-lily (*Nuphar pumila*) grows in the water here, found and described a century or so ago by someone called Miller, who, it is said, earned rapid promotion in the botanical world in consequence.

Just off the path leading out of the estate there is a small area of sphagnum bog which is being protected and features three rare plants - Lesser Twayblade (*Listera cordata*), Common Wintergreen (*Pyrola minor*) and Chickweed Wintergreen (*Trientalis europaea*), and at the end of the walk some members took a diversion through a dry wood to see Climbing Corydalis (*Corydalis claviculata*) in an unusual habitat.

The pleasures of the day were considerably enhanced by the company of Mr. Dick Hunter, a local resident well-known to our Society and to whom I am indebted for all the information contained in this account, which he has painstakingly gathered from a variety of old records.

R.A. Begg

Trip to the May Island - 8th August 1981

On Saturday, 8th August, 12 members of the Natural History Society set sail from Crail Harbour for the May Island. It was a warm day and the crossing was calm but the visibility was rather poor.

The group was met by the Warden, Mr. Kevin Bayes who very kindly gave a talk about the Island and gave an idea of the bird numbers up to date. He said that the numbers this year were as follows:

Oystercatcher	-	25 pairs, 14 fledglings reared
Kittiwake	-	approx. 5,000 pairs
Puffin	-	" 10,000 pairs (only 100 pairs in early 60's)
Guillemot	-	" 10,000 birds
Razorbill	-	" 1,000 birds
Gulls	-	" 17,000 pairs in early 60's 3,000 pairs in 1981 after culling in early 70's
Shag	-	" 1,300 pairs (the largest colony in Great Britain)
Fulmar	-	" 100 pairs, 60 fledglings reared
Eider	-	" 300 pairs, 60-70 fledglings
Lapwing	-	" 7 pairs, but no fledglings

The Warden explained that the gulls caused erosion with the consequent destruction of top soil. However, since the gull cull in the early 70's the plant growth was returning. In the last ten years changes in the plants have occurred - Thrift (*Armeria maritima*) has been ousted and Common Chickweed (*Stellaria media*), Scentless Mayweed (*Tripleurospermum maritimum*), Sea Campion (*Silene maritima*) and Sheep's Sorrel (*Rumex acetosella*), which has a high tolerance of high mineral content in the soil, have taken its place.

The 12 members of the Society on the outing saw all the above named sea birds and also Turnstone but not Purple Sandpipers although they had arrived the previous day.

As far as mammals were concerned, 300 Grey Seals were born on the Island last year. Some members counted 32 basking on the rocks. Also seen were several brown rabbits and one white one.

B. Gordon

Outing to Whitlaw Mosses and Lindean Reservoir - 22nd August 1981

The day dawned with blue skies and sunshine and stayed that way for the whole day and for some 20-odd members this was an exceedingly good outing.

The Whitlaw Mosses, near Selkirk, form a Nature Conservancy Council National Nature Reserve and consist of a group of four eutrophic¹ fens which are of outstanding importance as examples of northern fen. They include bryophyte, sedge and carr communities. The flora and fauna are of national importance and include several rare species. Lindean Reservoir is a S.S.S.I. and is part of the whole complex but is managed by the Borders Regional Council.

We were fortunate in having with us the N.C.C. Warden, Andrew Panter, and also Andrew Buckham who, as Ranger, looks after Lindean Reservoir. Andrew Panter explained that because of the delicate nature of these Mosses we could only go on to Murder Moss and round the periphery of Beanrigg and Blackpool Mosses and only view Whitlaw Moss from a distance. We went to Murder Moss first and while we sat on the grass on the small island, Andrew Panter explained how these mosses had arisen from open water through the gradual build-up of silt along with the vegetation to the present areas of raised bog. There is a wide diversity of species and the trophic status ranges from base poor to base rich with a range of botanical species which is quite wide, several species being rare. The combination of rare and local plants is not known from any other mire site in Britain. The vertebrate and invertebrate species are less well-documented but some 50 species of aquatic Coleoptera have been recorded, five of which are rare.

After our introductory talk, we walked round part of Murder Moss and were pleased to see several specimens of Scotch Argus butterfly (*Enebria aethops*). Also some specimens of the Small Tortoiseshell (*Aglais urticae*). It was perhaps unfortunate that being the end of August much of the botanical interest had receded. However, Greater Spearwort (*Ranunculus lingua*) was in evidence, also Marsh Valerian (*Valerian officinalis*), Marsh Hawk's-Beard (*Crepis paludosa*) and Devil's-bit Scabious (*Succisa pratensis*). Some specimens of the Black Darter Dragonfly (*Striolatium scoticum*) were also seen. The company was suitably impressed by the 'well-eyes' which look like large cauldrons of bubbling mud, continually on the move and ready to suck into its maw the unfortunate creature who steps into it, never to be seen again.

From Murder Moss we went along to Beanrigg and Blackpool Mosses where lunch was taken. A periphery walk between these two mosses was of great interest and here we found the rare Holy-grass (*Hierochloe odorata*), Cranberry (*Vaccinium oxycoccus*), and although not seen, Coral-root

¹ rich in nutrients.

(*Corallorhiza trifida*) is present at Beanrigg Moss. From these two mosses, we then moved to Lindean Reservoir. At this point we were able to see Whitlaw Moss but were unable to move on to it. We walked round Lindean Reservoir and noted Water Plantain (*Alisma plantago-aquatica*), Mares-Tail (*Hippuris vulgaris*), and Hairy Tare (*Vicia hirsuta*). A brief explanation of how insect populations are arrived at was shown, using pit-fall traps to catch Ground Beetles (*Carabus*) as the species being investigated. All day the birds had not been much in evidence but a family of Sedge Warblers were noted and plenty of Coot on the open water of the Reservoir.

All in all, this was a most enjoyable day, much was seen, much was learned. Our thanks go to the two Andrews - Panter and Buckham - for showing us so much of great biological interest.

P.W. Brown

Outing to the Falls of Clyde - 29th August 1981

On Saturday, 29th August, 31 members visited the Scottish Wildlife Trust Reserve at the Falls of Clyde. The outing began at New Lanark where the Warden, Mr. Andrew Campbell, gave a talk about the Restoration of New Lanark and the plans for its future and for the Wildlife Reserve. At present work is being done on the village houses. Some have been sold and some are to be let.

Mr. Campbell told us how it is envisaged that people of diverse interests will be drawn into the Reserve. People visit New Lanark not only for its historical interest but also for its geological and natural history interests.

New Lanark has a good situation as it lies one hour by car from both Edinburgh and Glasgow. This means that approximately two-thirds of the population of Scotland has reasonable access to it. As the restoration progresses so interest should grow. Robert Owen's School of 1815 is now being restored and so also is the mechanics workshop. The mill will be restored to be used as a centre for crafts or light industries. The planned Scottish Wildlife Trust Centre will have a very fine view of the river as it lies close to the riverside by Dundaff Linn and it should be an outstanding centre when completed.

The Warden explained that the Reserve has recently been enlarged, and the newly acquired part on the right bank of the river (known as the Bonnington Reserve) is a scheduled S.S.S.I. area. In it can be seen Ash, Elm, Hazel, Rowan, Holly, Alder, and it is rich in ferns, mosses, liverworts and lichens. At the time of our visit Harebell (*Campanula rotundifolia*) and Common Wintergreen (*Pyrola minor*) were very noticeable.

The slow process of converting coniferous woods into broad-leaved woodland is under way and hardwoods are gradually being planted. Some of the trees will be thinned out and when this happens it is expected that the number of Roe Deer will increase. The natural growth such as Birch, Blaeberry, Harebell is already appearing. In some areas the trees are of a mixed age; this is because trees were cut down during the war and not replanted and natural rejuvenation has occurred. In the Clyde area the growth of trees is as fast as in the south of England. Ash, in particular,

grows very quickly here. It has been suggested that coppicing of trees could be done to supply a demand for wood for wood-fire stoves. There is no real reason why this cannot be done in a Conservation area. As the coniferous trees, such as Norway Spruce, Douglas Fir, Larch and Sitka Spruce are felled the trees to be planted will be Birch, Ash and Scots Pine.

The party followed the path going from New Lanark to Bonnington Linn, then after crossing the bridge to the left bank of the river they made their way to Corra Linn and Corehouse. As some work was being done at this time by the Hydroelectric Board necessitating the release of water, the Falls were very full and everyone was delighted to see Bonnington Linn and Corra Linn falling in such strength so spectacularly.

B. Gordon

Walk from Yellowcraig to North Berwick - 5th September 1981

About 20 of us set out with Mr. Archie Mathieson as leader. It was a lovely sunny day with a following light breeze. We started through the wood at Yellowcraig and almost immediately saw Goldfinch, Coal Tit, Blue Tit and Goldcrest. Mr. Mathieson told us he had seen about 20 Goldfinches feeding on the Greater Knapweed a few days earlier.

The path through the wood was bordered with Lesser Burdock (*Arctium minus* ssp *minus*). Archie Mathieson explained that it spread through its beaked fruit-heads becoming attached to the clothing of people using the path. The 'mine' of the larva of a leaf-miner moth on the Lesser Burdock was seen starting as a narrow line and getting broader as the grub ate its way through the leaf.

On this path we were shown a small Ash tree. One half of the little tree had very small leaves and this was because the stem had been damaged by Roe Deer and so sap could not rise. It was thought to be territorial marking. The leaves of the Sycamore trees were covered with black spots caused by a fungus, but the trees survive. Leaves in the cities do not suffer in this way because fumes and smoke act as fumigating agents. Crossing the sand dunes to the shore we saw burrows of a species of solitary wasp. It feeds on insects dragging them into a burrow. On reaching the shore we examined shells, seaweeds and some shore animals, including the greeny-yellow-brown Shore Crab (*Carcinus maenas*) with three blunt teeth between the eyes. We also saw the skeleton of the Swimming Crab (*Portunus depurator*) which lives in deeper waters, only occasionally being seen between tide marks. It has paddles and three sharp teeth between the eyes.

A list of birds, plants, shells and seashore animals seen on this interesting day is with the Records Secretary. We are grateful to Archie Mathieson for leading us and giving so freely of his wide natural history knowledge.

C.M. Wood

Outing to Glendevon - 12th September 1981

Imagine a long, long winding queue of walkers dressed in as many water-proof clothes as possible, all in pelting rain, winding their way slowly up from Glen Devon by Glen Corb to the Common of Dunning. The queue stretched as far as the eye could see in front and behind, for it was around 90 in the number of heads, 30 Edinburgh Natural History Members and 60 Dundee Naturalists.

The walk began at Glen Devon Youth Hostel by moorland path, up the Borland Glen, rising from about 700 feet to 1200 feet, then dipping down to the Corb Burn where Brooklime (*Veronica beccabunga*), Monkeyflower (*Mimulus guttatus*), Marsh Willowherb (*Epilobium palustre*), Ivy-leaved Crowfoot (*Ranunculus hederaceus*), Water Speedwell (*Veronica anagallis-aquatica*), Marsh Thistle (*Cirsium palustre*) were found.

As the party wended its way through Corb Glen the weather improved and the sun came out. Here to be seen were Ragged Robin (*Lychnis flos-cuculi*), Creeping Thistle (*Cirsium vulgare*), Lesser Spearwort (*Ranunculus flammula*), Changing Forget-me-not (*Myosotis discolor*), Yarrow (*Achillea millefolium*), Pineappleweed (*Matricaria matricarioides*), Lady's Bedstraw (*Galium verum*), Tormentil (*Potentilla erecta*), Sneezewort (*Achillea ptarmica*), Lesser Stitchwort (*Stellaria graminea*), Woodruff (*Galium odoratum*), Mouse-ear Hawkweed (*Hieracium pilosella*), Devil's-bit Scabious (*Succisa pratensis*) and Toad Rush (*Juncus bufonius*).

After reaching Corb Bridge some members walked about half a mile up by Tonguey Faults where they were very pleased to find Spignel (*Meum athamanticum*).

B. Gordon

Loch Ard Weekend - 19-21st September 1981

The September Weekend was based on Kinlochard, 6 miles west of Aberfoyle. The party was housed in the Loch Ard Youth Hostel, a large converted private house with magnificent views over Loch Ard, and in the Alltskeith Hotel, formerly a shooting lodge, and a local guest house.

The fine summer weather of the past few weeks had already broken and continued its downward trend over the weekend.

The Queen Elizabeth Forest Park, which includes Ben Lomond, Loch Ard and the Trossachs, started with small beginnings in 1928 when the Forestry Commission bought land in the neighbourhood of Loch Ard. Eleven years later the Commission bought Dounans and Achray after which the Duke's Road linking Aberfoyle and the Trossachs was opened to the public. Further lands were bought in 1945. The Forest Park now covers 42,000 acres, 32,000 of which are used for forestry while the remaining 10,000 consist of lochs and mountains. The Forest Park was given its present name at the time of the Coronation of our Queen.

Although for much of the weekend we were amongst conifer plantations, remnants of oaks were evident within these areas, with more extensive oak

woods in the Trossachs and Achray area and along the road past Loch Chon. Most of the oaks were planted in the 1700's to meet the demand for oak bark in the tanning industry. On the Montrose estates which now comprise much of the present Park except for Duchray, mixed hardwoods and conifers were also planted.

On Saturday, the group walked along the Forest Trail from Milton a mile west of Aberfoyle by the south shore of Loch Ard to Kinlochard, a distance of about 6 miles. Thereafter, some returned to Milton by a higher route, while others explored the west end of Loch Ard. The old and picturesque mill at Milton was used as a lint mill when flax was grown in the area, and later as a corn mill. The walk was a pleasant one with attractive views over the loch but little of exceptional natural history interest was seen. Herons were fishing on the water edge, tracks of Roe Deer were seen repeatedly, cup fungi edged the tracks, and ferns and sedges were much in evidence.

On Sunday after a night of gales and torrential rain we headed for Achray and the slopes of Ben Venue. Walking was relatively dry underfoot for the early part of the ascent while we were following the forestry road. The route then followed peaty waterlogged tracks through the wood onto equally waterlogged moorland. Nevertheless, 10 members headed for the summit of Ben Venue where the full force of the wind combined with rain persuaded half the party to retrace their steps while the rest continued over the top to come down by Ledard Farm. Some of the party remained within the shelter of the forest for much of the day. As we came off the hill, we made for the David Marshall Lodge beside the Duke's Road. From there in between the heavy showers we had good views of the surrounding hills and over the Forth Valley.

On Monday the S.W.T. Reserve at Flanders Moss was visited. Mr. Bill Brackenridge, who is a District Ranger with extensive botanical knowledge of the area, very kindly led the party. Unfortunately, after the heavy rain of the past few days the going was extremely difficult and with more rain falling while we were on the Moss, Mr. Brackenridge could not show us as much as would have been possible on a better day.

After lunch in the shelter of the cars the rain stopped and the run back to Edinburgh was in sunshine.

E. Farquharson

Outing to Aberlady Bay - 3rd October 1981

It was after two days of heavy and persistent rain that a party of the more hardy and optimistic members met at the timber bridge. The cloud cover was low and a snell wind blew from the north. A Sandwich Tern and two Swallows convinced no one that summer was still with us. We were fortunate to have the Ranger, Peter Gordon, to lead us.

We took the inland path past the Marl Loch where Mallard and Teal took off. Several Snipe and a lone cock Pheasant were seen. The Sea Buckthorn had a heavy crop of bright orange berries ready for the arrival of the Fieldfares. A large clump near the sewage tank provided cover for

some 30 Goldfinch when disturbed from feeding on the seedheads nearby. A similar number of Redpolls with a few Linnets, Greenfinch and Chaffinch flitted around this area. A gaggle of Pinkfeet flew overhead and the Ranger told us that about 650 had arrived so far.

By the side of the path we admired the green veined white flowers of the Grass of Parnassus, while a splash of blue and purple showed that Viper's Bugloss was still flowering. A dwarf Cranesbill flowered on the golf course cart track despite the traffic. While admiring these flowers, a Roe Deer broke cover and bounded over the marshy ground. How delightfully they move!

We lunched at Gullane Point where we could watch the shore. Oystercatcher, Redshank and Turnstone patrolled the beach, and the male Eiders were smart in their new plumage. Close inshore a Red-necked Grebe and a Red-throated Diver worked their way along the coast. Further out, Common Scoter and Gannet were noted.

The route back along the shore took us past the Ternery which had a disastrous year despite the watch. The Little Tern nested on a partially formed new shingle bank without taking note of the Tide Tables and were washed away. The Common and Arctic Tern provided tasty meals for a pair of foxes which raised four cubs nearby.

The tide was far out so waders were not easy to see. Ringed Plover and Grey Plover were plentiful, and in the distance a large flock of Bar-tailed Godwit wheeled spectacularly in the air. A Short-eared Owl was mobbed by two Crows and a flock of small birds joined in. The resident Kestrel hovered, probably feeding on the small frogs we had seen. We missed our expert on fungi as a large and varied assortment were noted.

Despite the weather it was a most interesting and delightful day.

K.W. Sanderson

Outing to Beecraigs Country Park - 21st October 1981

The first winter excursion of the season was to Beecraigs Country Park, south of Linlithgow, and we were met at the Balvornie entrance by Christine Dudgeon, the Park Ranger, who over the next few hours ably led us over, and explained the varied habitats of her territory. She described the Bathgate Hills as a highlands-in-miniature, just high enough to have heather and blaeberry groundcover in places; though considerable areas were close-planted with conifers, there were wide rides with amenity-belt plantings; birch groves; strips of mature beech, oak, elm and other hardwoods along the lines of old boundary walls; open meadows, burns and several lochs.

The recent rains ensured that the ground was very wet underfoot, and in such conditions we were not surprised to find prolific growth of fungi, including plenty of specimens of the poisonous Fly Agaric (*Amanita muscaria*). Wild flowers at this wet end of the season were rather bedraggled Harebell, Yarrow, Common Ragwort, Common Knapweed and Marsh Thistle, and at one site our Guide was able to show us good specimens of Male-fern, Lady-fern and Broad Buckler-fern.

A climb over open hillside took us to the 900-foot top of Cockleroy (the old name was Cuckold le Roi) where despite the strong cold wind we enjoyed fine views over the autumn countryside. The Ranger pointed out the original site of Loch Cote to the north of the existing, but now disused, reservoir.

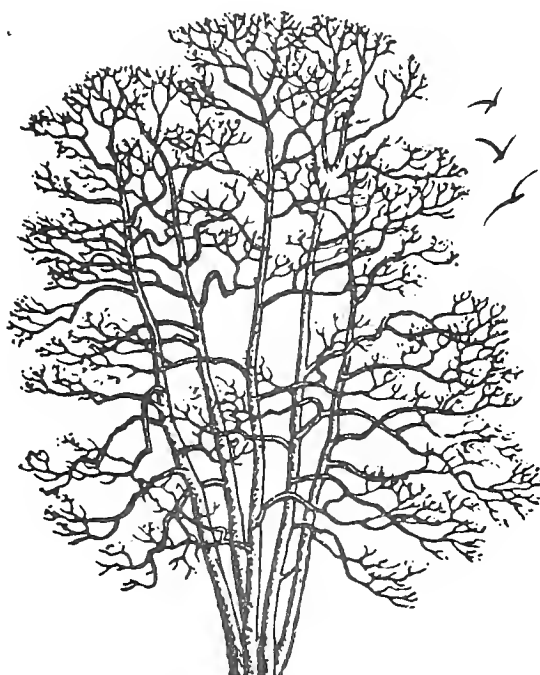
Further woodland walks brought us to Balvormie Meadow, a valuable 14 acres of untreated old meadowland with a belt of limestone running through it, which still supports a colony of Butterfly Orchids. During the excursion we often found evidence of Roe Deer presence and at one point saw a couple moving through the bracken in the wood. Badger and Fox are also present in the Park.

In the strong wind, the birdwatchers did not expect much success, but we did find Coal Tits, a small flock of Siskins, Wrens, Robins, then when we reached the more sheltered woods round Beecraigs Loch, Treecreeper and Goldcrest were added to the list, while on the Loch itself were many Tufted Ducks and a few Mallard, Pochard, Little Grebes and Coots. To the east side of the Loch where we climbed to have a look at the Country Park's breeding herd of Red Deer, we watched a large flock of Fieldfares, and four Herons, often harried by Crows, on the hillside above the Park's Trout Farm which no doubt supplies some of their food. The Ranger said there was a heronry by Loch Cote.

We bade farewell with thanks to our Guide, Christine, back at Balvormie, and the homeward journey in a beautiful autumn evening was rounded off by sightings of a hunting Kestrel, a covey of Partridge, large flocks of Peewit and a fine skein of Geese flying south.

M. Watson

**THE
EDINBURGH
NATURAL HISTORY SOCIETY**



**JOURNAL
1982**

EDINBURGH NATURAL HISTORY SOCIETY - 1982

PRESIDENT	Mr W.D. Gill
VICE PRESIDENTS	Miss N.F. Henderson / Mrs E. Farquharson
HONORARY SECRETARY	Mrs C. Stewart 41 Craigleith Hill Avenue, Edinburgh EH4 2JL Tel: 031-332-7524
ACTING ASSISTANT SECRETARY	Mrs E. Gillespie 11 Drylaw Crescent, Edinburgh EH4 2AU Tel: 031-332-3214
HONORARY TREASURER	Mr A. Dickson 31 Alva Place, Edinburgh EH7 5AY Tel: 031-661-1216
MINUTES SECRETARY	Mrs S. Litteljohn
COUNCIL MEMBERS	Dr R. Begg appointed 1980 Mr S. Clarke 1980 Mrs E. Gillespie 1980 Mr P.W. Brown 1981 Mr C.P. Rawcliffe 1981 Mrs J. Robinson 1981 Mr W.D. Bennett 1982 Mrs C. Campbell 1982 Mrs B. Gill 1982
JOURNAL COMMITTEE	The President (ex officio) Mrs E. Farquharson Miss H. Jackson Miss J.K. Raeburn - Convener Mr C.P. Rawcliffe
EXCURSION COMMITTEE	Miss M. Abel 2 Marchmont Street, Edinburgh EH9 1EJ Mrs E. Gillespie 11 Drylaw Crescent, Edinburgh EH4 2AU Miss B. Gordon 17 Argyle Crescent, Edinburgh EH15 2QQ Miss A. McCafferty 1 Craighouse Road, Edinburgh EH10 5LQ Mrs H.M. Miller 72 St. Albans Road, Edinburgh EH9 2PG Miss E.O'Donnell 22 Jordan Lane, Edinburgh EH10 4QZ Mrs M. Robertson 42 Gardiner Road, Edinburgh EH4 3RN
RECORDS SECRETARY	Miss M. Mowat 45 Merchiston Crescent, Edinburgh EH10 5AH
EXCURSION REPRESENTATIVE on the COUNCIL	Miss B. Gordon
LIBRARIAN	Miss F. Howie 3 Wellington Street, Edinburgh EH7 5EE Tel: 031-556-6471

CONTENTS

	Page
EDITORIAL	2
GUNN BEQUEST MANAGEMENT COMMITTEE	3
THE LATE P.W.G. GUNN — HIS CONTRIBUTION TO THE E.N.H.S.	4
THE GUNN PHOTOGRAPHIC COMPETITION	7
THE BOTANY OF THE LOTHIAN	7
NATURAL HISTORY COLLECTIONS IN SCOTLAND	9
WINTER INDOOR MEETINGS	11
FIELD ECOLOGY AT KINDROGAN	13
AUTUMN BRYOPHYTES AT KINDROGAN	14
RATS AND THEIR HISTORY	15
INHABITANTS OF SPHAGNUM	18
NOTES AND OBSERVATIONS ON NATURAL HISTORY	
Dutch Elm Disease - Now a threat from Russia?	20
Giant Hogweed - a curiosity or an obnoxious weed?	21
News from Hopetoun 1982	22
Some observations on fungi - 1982	23
Feral Mink	24
Forth Island bird count - 1982	24
Some bird observations - 1982	25
Migration at St Abb's	26
Introducing Aeshna dragonflies	26
Observations on insect movements	28
<i>Sympetrum striolatum</i> - a red dragonfly at Aberlady	30
Some Lepidoptera in 1982	30
More sightings of butterflies	31
Two common moths	32
Weeds in an Edinburgh Garden	33
Some sightings of the Grey Heron	34
EXCURSIONS 1982	35
REPORTS AND EXTRACTS FROM REPORTS	37

EDITORIAL

The 1982 Journal brings members up-to-date with the activities of the Society.

It will be remembered that in 1981-82 the Council was very pleased to receive a bequest from the estate of Miss Agnes Gunn, the sister of the late Mr Peter Gunn and given to the Society in his memory.

Mr Peter Gunn was an esteemed member of the Society and a short appreciation of his connection with it has been written for this Journal by his great friend, Mr George Carse.

Also in the Journal you will find the names of those on the Gunn Bequest Management Committee, a committee set up to consider and report to the Council on appropriate ways of spending the money and following through the ideas adopted. Suggestions were asked for and received from members and the Committee has already acted on several. Short accounts of how money has already been used are given on page 3. At any time the Committee will be pleased to receive from members further suggestions for consideration.

It was decided by the Council to retain the Ian Sime Fund distinct from the Gunn Fund and to continue to use it in a way which began two years ago for providing grants to help members attend a Field Course or to take part in some biological project. Accounts from two members of 1982 Courses appear in the Journal. It is hoped that these will encourage applications in 1983.

Perhaps the most exciting event of the year was the launching of the book, "A Guide to Edinburgh's Countryside - Habitats and Walks within the City Boundary". The project was initiated in 1978 at the Annual General Meeting - this is recorded in the 1978 Journal - when members were invited to take part in the venture. From then on many members contributed by making observations, choosing routes, identifying plants and animals, drawing maps and illustrating what may be seen on walks.

With financial help and a great deal of encouragement from the Carnegie United Kingdom Trust, the book was completed and published in May 1982 by Macdonald Publishers, Loanhead. We thank the Publishers for their interest and enthusiasm. David Bellamy wrote that he was honoured to have been asked to write the Foreword.

Four years ago when a lawyer's office was being closed down, a collection of pressed flowers made in 1877 and given by a member (not the collector) in 1906 into the care of the then President of our Society (then known as the Edinburgh Field Naturalists and Microscopic Society) came to light. At this very late date it was returned to the Society. It has now been examined by the Council for Museums and Galleries in Scotland and is being recorded on their register. It has been placed in the keeping of Glasgow City Art Gallery and Museum as the R.B.G. were unable to house it. They have catalogued it under E.N.H.S. and will make it available for research workers and students.

There may be other such collections hidden away. Elaine Campbell of the Council for Museums was invited to write an article about the work of the Council for this Journal - see page 9.

We were very pleased to receive an observation from Michael B. Usher (see page 31). In 1965, Michael Usher initiated the E.N.H.S. News-letter,

the forerunner of this Journal. Then 50 years had elapsed since the Society had gone into print, the last edition of the "Transactions" having been published in 1915. Michael Usher continues to be a member of our Society although he now works at the University of York.

Finally, once again the Editorial gives an opportunity of thanking the Honorary Secretary, her Assistant, the Records Secretary and the Minutes Secretary for their untiring work, the Honorary Treasurer and Auditor who manage and oversee our finances so ably, the Excursion Committee who arrange and organise exciting and interesting outings throughout the summer and on some winter dates.

Thanks are also due to the Catering Group who always have refreshments ready for us at the end of Meetings, the Projectionist for his expert handling of light and sound, the Librarian always on duty at the library cupboard before each meeting and the Members themselves whose enthusiasm and interest keep the Society lively and enjoyable.

We also thank Mr Gordon Finnie and his associates and Mrs Frances Anderson for all the interest they take in the production of the Journal.

GUNN BEQUEST MANAGEMENT COMMITTEE

President (ex officio)	
Mr George Bell	- Chairman
Mrs Nancy Fisher	- Secretary and Representative on the Council
Mrs Elizabeth Farquharson	
Miss Nora Henderson	
<i>Mr George Carse</i>	- <i>Adviser to the Committee</i>

Grants and purchases organised by the Committee

A grant of £200 has been given to the Botanical Society of Edinburgh (B.S.E.) towards the expenses of a new "Flora of the Lothians". See an account of the project written by our member, Miss Helen Jackson, who is a member of the organising committee of the proposed new flora (page 7).

A grant of £200 has been promised to the Bawsinch Committee of the S.W.T. towards the provision of an alarm system at Bawsinch.

A grant of £100 has been offered to one or more students attending an Edinburgh school, who are interested either in Biology as a career or Natural History as a hobby, to enable them to attend a Field Centre in 1983.

A pH indicator - an instrument which measures the alkalinity or acidity of the soil or water - has been bought for use by members of the Society. Any member who would like to use it should apply to:

Mrs E. Gillespie
11 Drylaw Crescent, Edinburgh EH4 2AU

A grant of approximately £100 to the Journal Committee to cover the cost of the page of photographs in this Journal.

In future years, money will be provided to reproduce any photographs which illustrate articles accepted for publication in the Journal.

THE LATE P.W.G. GUNN

HIS CONTRIBUTION

TO THE ADVANCEMENT AND AIMS OF THE E.N.H.S.

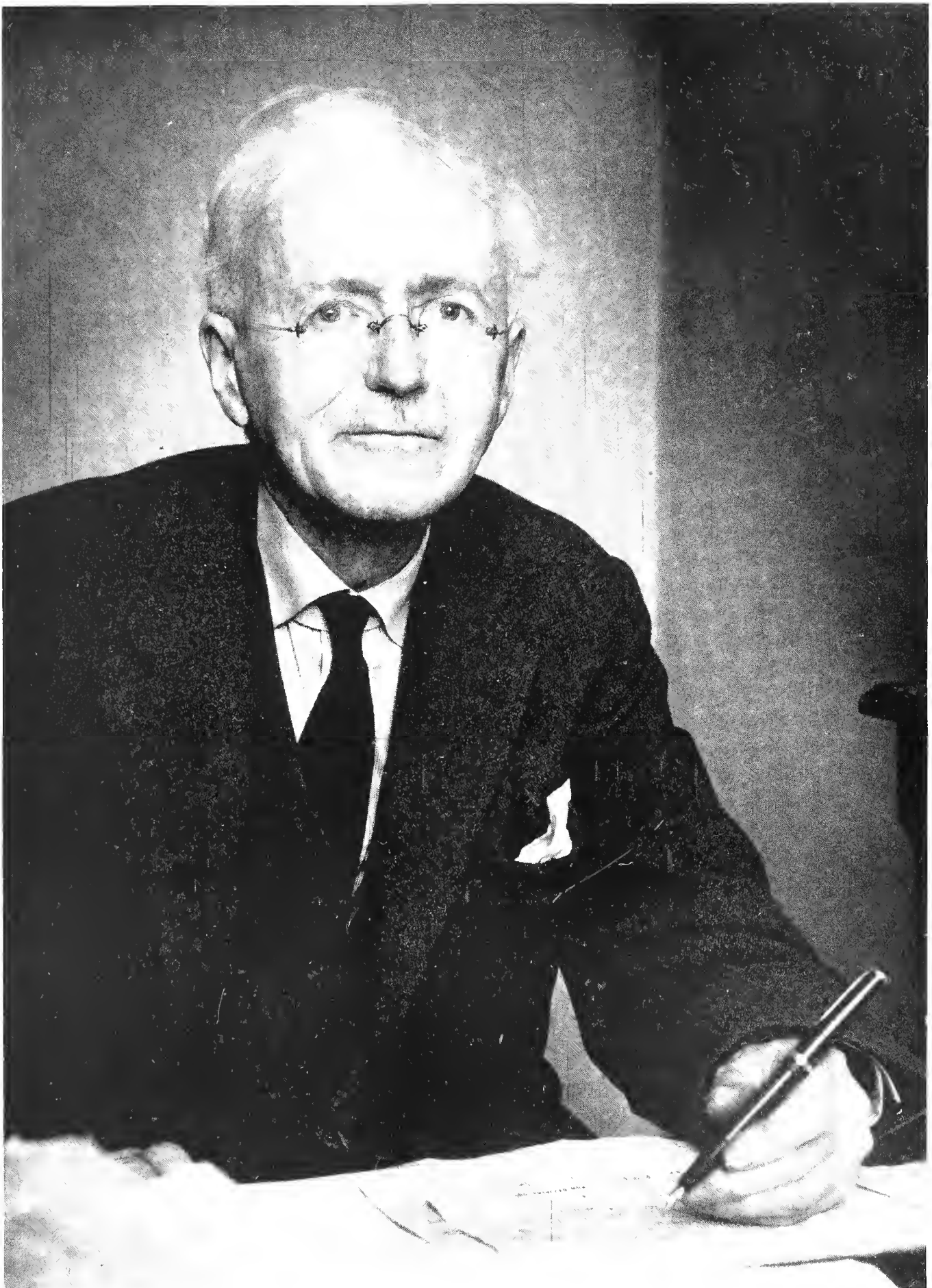
It would be difficult to assess exactly the influence and impact of Peter Gunn - the President of our Society from 1945-1948 and Honorary Life President from 1959 till his death in April 1978 - on the growth, development and well-being of our Society over the last fifty years. He applied his talents in so many different directions, and in so many intangible ways. He was essentially a field naturalist imbued with an unquenchable love of Botany and Ornithology, whose observations though not primarily scientific were none the less meticulous and accurate to a high standard.

This enthusiasm for Natural History Peter Gunn was able to pass on to others not only by the lectures he used to give annually, but by personal influence. One of those he recruited into the ranks of the Society was the late William Hall, one of our most valued members over the last thirty years, who was secretary from 1955-1965, in which office he gave such unstinted service, particularly in the organisation of week-end activities. In a character sketch that appeared in the "Evening News" of December 1957, Frank Hamilton said of Mr Gunn, "He preferred to be thought of as one who loves and enjoys birds and flowers, his attitude to these having more in common with that of writers whom he admires like Wordsworth or Hudson than that of those for whom the scientific approach alone counts, and aesthetic pleasure is irrelevant".

Peter Gunn had a forthright nature, was a man of pronounced views, and had an incisive mind, which made him an invaluable member of the Council, at whose meetings his advice was eagerly sought, and willingly given. Many of us hoped that he would, out of the fruits of ripe experience and a long interesting life, produce a publication particularly recording his observations of the comparative figures and distribution of various species of birds. One such example was the corncrake, which he remembered in his youth as being widely distributed throughout the Lothians. Alas! such an invaluable book on more than half a century of bird-watching never eventuated. It would have been valuable for giving us a glimpse into the reasons for the severe decline of certain species, now endangered, illustrated by his superbly beautiful photographs.

The passing of Peter Gunn certainly marked the end of an era in the ever-changing story of our Society. Outside his work as a solicitor and his home life, our Society was his unflagging interest. It is too early yet to measure fully the permanent impact of his services to the Society over a period of more than fifty years, but we can be assured that it will endure.

G. Carse



Peter W. Gunn



Glensax, Peebleshire



Gypsy Family



Pastoral



Carlin Maggie – Fife

THE GUNN PHOTOGRAPHIC COMPETITION 1983

In view of Mr Peter Gunn's interest in photography it has been decided to have an annual photographic competition.

Entry is open to all members of the Society other than those who are professional photographers.

The subject of the entries should be related to natural history within the United Kingdom or be connected with the Society itself.

Only one entry should be submitted by each member and may be a print or slide either black and white or colour. All entries will be returned but the Society cannot accept responsibility for any loss or damage.

Entries should be submitted by 30 September 1983 to any member of the Gunn Bequest Management Committee as listed in the Journal.

The selection of the winning entries will be made as far as possible by non-members of the Society and awards of £15, £10 and £5 will be given.

The awards will be presented on Members' Night when there will be a display of all entries. The winning entries will also be reproduced in the Journal.

Erratum - Carlin Maggie is in Kinross, not Fife as stated on opposite page.

THE BOTANY OF THE LOTHIANS

By now, if you are interested in botany, you will probably have bought a reprint of the Field Club Flora of the Lothians. This was originally published in 1934, expanding the 1927 edition which was based on C.O. Sonntag's Pocket Flora of Edinburgh and the Surrounding District (1894) as well as on contemporary field records. All this was fifty years ago, if not a hundred, and times and the Lothians have changed. When did you last see a cornflower (*Centaurea cyanus*), and have you ever seen Corncockle (*Agrostemma githago*) or Shepherd's-needle (*Scandix pecten-veneris*)? Our predecessors had not seen Slender Speedwell (*Veronica filiformis*), Oxford Ragwort (*Senecio squalidus*) or Giant Hogweed (*Heracleum mantegazzianum*). The time is obviously ripe for a new Flora of the Lothians.

In recent years a number of counties have produced their own up-to-date Floras, and in 1971 a new development appeared — A Computer-Mapped Flora: A Study of the County of Warwickshire — the work of Birmingham Natural History Society. Besides the usual text, this volume contained distribution maps showing by linear symbols the habitats in which a species occurred and by thickness of line whether or not it was plentiful. The computer also provided statistics, for example Stinging Nettle (*Urtica dioica*) was recorded from roadsides, waste places, farmyards and railway banks (35%), hedgerows and scrub (29%), grassland (12%), watersides (10%), woods (9%) and cultivated land (5%). All this and more took fifteen years to prepare and involved the participation of a lot of people, some to a greater extent than others. True to the authors' analytical approach, top contributors to

the survey received a star or other symbol against their name in the acknowledgements columns, and there, duly annotated, is one Dr. P. Smith.

Now settled in Edinburgh, Dr. Philip Smith has made the vital move to set in motion the preparation of a Botany of the Lothians, drawing on his experience with the Warwickshire Flora. The plan is to revise the flora of the Lothians as thoroughly as possible over a period of about ten years, to publish notes on all species, distribution maps for many, a list of rarities which would be endangered by having their whereabouts mapped, and chapters on such related topics as geology, climate and changes in agriculture and land use. Following discussions with the Botanical Society of Edinburgh's Council, members were invited to a meeting in February 1982 to hear Professor J.G. Hawkes, one of the Warwickshire authors, talk about the work involved in producing a computer-mapped Flora. At a meeting in May instructions were given for the part that will involve most people — the field recording.

The basic unit chosen for recording is the one kilometre square. Ideally, one would wish to record every square but in East Lothian alone there are roughly 960, which would mean covering about 120 a year for eight years, allowing two seasons for back-checking (returning to under-recorded squares or checking dubious records). Multiplied by three, approximately, this target becomes even more unachievable. So, as in Warwickshire, the computer has picked at random one square in every tetrad (2 x 2 block), at least to start with. This gives even coverage of the entire region and ensures that there is no bias towards particular habitats. It is very fair. It also means that a lot of areas known to be important have been missed out. The intention is to remedy this by recording these separate sites as well, and here it is planned to co-operate with the Scottish Wildlife Trust who have identified, through their extensive habitat survey, a long list of sites worthy of more detailed botanical investigation. Information from these will be included on the maps but not in the statistics. Information from existing records will be incorporated in the text.

The one kilometre square was chosen because it is a manageable size and it should, in theory, be possible to cover the area in a day. Recording is by habitat — you keep a separate list of species for each major habitat, e.g. woodland, waterside, maritime. Each of these has subdivisions, for example maritime divides into dune, cliff, shingle beach, salt marsh and coastal scrub, and you write the appropriate code letter against each species. Almost any square will contain several major habitats so it is important to cover enough ground to make sure that they are all represented. You are also asked to assess the frequency of a species — in four grades — and code it accordingly. In this trial year we tried to record on the Biological Records Centre's cross-off field cards but it is clear that cards must be designed and printed specially for this survey. Edinburgh Natural History Society has very generously given £200 to the Botany of the Lothians Fund, and this is just the sort of thing that it might be used for.

You do, of course, need to know the names — eventually the Latin names — of the plants you are recording, but don't let this put you off! Beginners and school children are being encouraged to join in the project and we shall all be learning as we work. There are to be group meetings where instruction is given, which should be helpful. In any case, recording is easier with a companion — two pairs of eyes are more efficient than one. A complete beginner can assist in plant spotting without knowing a single name. Take a flower book with you and identify as many plants as you can in the field. When you have to collect a specimen pick as little as possible.

If it is the only one or you think it might be something rare, leave it and try to get someone to come and look at it. If you cannot identify a plant at home, press it — there is a panel of experts who will identify specimens for us. The recording instructions include a long list of critical groups such as Docks (*Rumex*), Willowherbs (*Epilobium*) and Rushes (*Juncus*) for which specimens should be sent in anyway. Squares should be visited at three times of year — in spring, early summer and late summer or autumn. More visits than this will probably not add many species and it would be better to put your energy into another square. Almost any square should contain 100 species and 350 can be expected from some — perhaps 200 would be a good target.

Interesting plants have been turning up right from the start. In East Lothian, Knotted Hedge-parsley (*Torilis nodosa*) appears to be a completely new county record and Annual Knawel (*Scleranthus annuus*) the first record since 1881. Admittedly, these two are rather inconspicuous. If you prefer something prettier, Mountain Pansy (*Viola lutea*), Dwarf Mallow (*Malva neglecta*) and Knotted Clover (*Trifolium striatum*) — all good finds — might have given you more pleasure.

If you would like to take part in the Botany of the Lothians survey, contact Dr. Philip M. Smith, Department of Botany, The King's Buildings, Mayfield Road, Edinburgh EH9 3JH.

If you would prefer to help by recording the S.W.T.'s selected sites, contact Jim Campbell, 16 West Newington Place, Edinburgh.

In either case, you would be making a valuable contribution to a major project.

E.H. Jackson

NATURAL HISTORY COLLECTIONS IN SCOTLAND

In the 18th and 19th centuries, the study of Natural History was a very popular pastime. People who worked in the country already had an intimate knowledge of their surroundings, and professional people such as doctors and ministers became interested in Natural History as an interesting pastime which was also a relaxing way of exercising their minds. Wealthy people with no need to work had much leisure time and so many of them occupied themselves by studying Natural History.

During this period, there was therefore an increase in knowledge about the Natural History of Scotland, and this was encouraged by amateur naturalists who built up collections reflecting their interests. Such collections included dried and pressed plants, rocks and fossils, minerals, birds' eggs, insects and even stuffed birds and animals. Many of these amateurs used their collections for study and research and therefore the collections contain valuable information which is of use to the naturalists and scientists of today. Such collections can show what types of vegetation were found in different areas, when plants were introduced, the variation and distribution of butterflies, the migration of birds, etc.

As time went on, more people had access to the countryside, and Natural History Societies were born to reflect and promote the interests of their

members, and to heighten their enjoyment of the countryside by special visits, talks and lectures.

Museums were created, and people from such societies donated Natural History collections or objects to the museums to be displayed or stored for posterity. Other collectors donated collections to teaching institutions such as Universities, gave them to their family or friends, or sold them, and most of these are now very difficult to locate. As a result, many collections and the associated specimens and information are unknown to the people most interested in them.

That is one of the reasons why a Collections Research Unit was set up in Scotland. Its main aim is to compile and publish a register of information regarding botanical, zoological and geological collections in Scotland, as part of a larger scheme to register the whereabouts of Natural History collections throughout the whole of Britain.

Concern was expressed about the number of collections which were 'lost' in Britain, and the Unit is trying to rediscover some of these older collections along with information about more modern research or enthusiast collections to make the register as complete as possible.

Collections can be 'lost' in various ways:

1. They are thrown out or sold due to lack of space, or when moving house.
2. By people not realising their existence in some untouched attic or cellar.
3. By an owner who realises he has a collection but does not realise the true scientific value of the collection and so leaves it dormant in an attic.
4. Botanical and zoological collections being of an organic nature are prone to attack by mould, insects and other pests unless properly cared for. Even apparently stable geology samples can deteriorate and decay unless they are actively maintained.

The task is clearly substantial and its success depends largely upon a comprehensive survey and the good will of both professional and amateur collectors.

Museums, Universities and Colleges are co-operating with us at the moment by giving us information about all the Natural History collections which they hold, but we would also like to include collections held privately to make the register complete.

If you own or know of any such collections and you think their existence should be recorded, please contact us at the address below.

We usually ask the owner to record the collection since he/she will usually know details about the collection which are not written down, but we can arrange to visit the collections if required. Details of the location and ownership of collections can be withheld from the register on request to preserve the confidentiality of valuable private collections.

E. Campbell

Save Scotland's Natural History Heritage

Write to: Council for Museums and Galleries in Scotland (NSCRU)
20/22 Torphichen Street, Edinburgh EH3 8JB

WINTER INDOOR MEETINGS 1982

January: This meeting was addressed by Dr Rosalind Smith, Assistant Regional Officer for the Nature Conservancy Council in the Perth and Kinross District. Dr Smith outlined the duties of the Nature Conservancy and elaborated on the ways in which the aims were being implemented. She showed slides illustrating the different types of habitat that she was responsible for preserving — from the low-lying lochs to the mountains above Kindrogan Field Centre. It was her responsibility to locate areas of special interest which were in danger of being destroyed and to gain co-operation of the landowners or in some cases to lease or buy the areas. She had to assess the ecological consequences of how land use might affect the countryside in the future and to educate the public.

February: 'Countryside Tapestry' was the subject chosen by Dr Keith Graham, Senior Ranger for the Stirling Area who has special interests in the Trossachs. The atmosphere was set by Dr Graham showing pictures of the area with appropriate sound accompaniment. He explained that his area was a mixture of Highland and Lowland and it was the ice which had carved the landscape in its characteristic style. Other changes throughout the ages had been brought about by extensive sheep farming, the large-scale growing of barley, the development of forestry, and more recently the development of tourism. Sir Walter Scott did much to popularise the Trossachs. Today, the Ranger Service provides guided walks and strives to point out the interrelationship between the insects, birds, animals and plants, and how, if left undisturbed, each link in the chain has its part to play and a natural balance is established. Dr Graham gave an amusing account of the work he does with sick animals and birds and special mention was made of his tame fox and thrush. His aim in treating the animals is to prepare them for return to the wild.

March: At short notice, Mr and Mrs D. Watson gave an account of their visit to the Galapagos Islands. The tour they went on from Equador lasted seven days and the boat was used as a hotel while they visited the different islands and so were able to get an overall picture of the group. They explained that much damage had been done by seamen of the past who raided the islands for food and introduced pigs, dogs and goats which preyed on the indigenous wildlife. The Darwin Research Station on Santa Cruz Island works to breed animals that might be in danger in their early years and then are returned to their natural habitat when the danger period is over. The animals, which differ considerably from one Island to another, show no fear of humans and very close views of them may be obtained. Slides were shown of iguanas, tortoises, sea-lions and birds which illustrated these points. We were also shown pictures of the physical features of the islands which had been formed by volcanic action, and, except in a few places where water was present, had no vegetation. Plant life was limited as the only pollinator present was the carpenter bee.

April: Members' Night. Talks illustrated by slides were given by:

Mr Graham White of the Environmental Resource Centre on work done with Primary School children to involve them in an appreciation of their environment.

Mrs E. Gillespie on grasshoppers and insects.

Miss Elizabeth Pilling on Snowy Owls and their young.

Dr S. Smith on a sunfish found on the beach at Gullane.

Mr G. Carse gave an appreciation of Mr Peter Gunn and slides taken by Mr Gunn, himself, were shown.

October: Mr Philip Brown, a member of our Society, chose as his subject, 'Canada - Two Innocents Abroad'. He described, with the aid of excellent slides, a holiday that he and his wife had taken in Western Canada. They travelled from Vancouver east to the Okanogan Valley and then to Banff and Jasper National Parks. He showed how ice had influenced the natural landscape and the beauty of the glaciers themselves. Many beautiful lake and mountain scenes were shown and the cleanliness and convenience of the camping sites were stressed. On Vancouver Island they visited the Butchart Gardens and recommended that if anyone was in the neighbourhood these should not be missed.

November: Professor Simmonds of the School of Agriculture, the University of Edinburgh, spoke on 'The Evolution of Crops'. He pointed out that crops evolved wherever agriculture was practised, chiefly in the Mediterranean, South-East Asia and China. This was done by anyone who collected seeds for resowing, from the peasant to the professor in charge of research. The crops were developed by natural selection — only the best specimens were chosen for replanting and if people moved they took their seeds with them and these may have become crossed with new varieties. He pointed out that there is no reason to think that evolution is slowing down. The future is unknown but change will occur. Unwanted characteristics from certain crops had to be eliminated, e.g. seeds from bananas and poison from potatoes, and this was accomplished by careful selection over a period of time.

December: Dr Cameron Easton, Assistant Regional Officer of the Nature Conservancy Council, spoke on 'The National Importance of the Lothians'. He began by saying that although the Lothians do not contain any very high mountains or large forests which might be thought of as places of National importance, its comparatively flat well-populated farming land is rich in wildlife. Certain places have been selected and given protection. The Firth of Forth, including the Bass Rock and other islands, are important for wildfowl and the dunes and salt marshes are rich in interest. There are mixed deciduous woods in Roslin Glen and the Deans of Lammermuir and sessile oaks in Woodhall Glen. At Dalkeith there is ancient woodland and, on old peat bogs, birch trees are found. As man becomes more efficient in Agriculture, natural things are edged out. Duddingston and Linlithgow Lochs are natural lochs and have natural nutrients for wildfowl, and Gladhouse Reservoir is of special interest as it gives shelter to about 10% of the British population of Pinkfoot Geese. Raised bogs, like Red Moss and Falla Moor are of special interest. Lothian is rich geologically with the remains of volcanoes and formations caused as the result of the Ice Age.

S. Litteljohn

14.7.82 *Water Scorpion (Nepa cinerea) found in the canal at Slateford on an E.N.H.S. evening outing. (E.G.)*

'FIELD ECOLOGY' AT KINDROGAN

Assisted by a grant from the Edinburgh Natural History Society, I attended the Kindrogan Field Study Centre, near Blairgowrie, Perthshire, from 24 - 30 March 1982 for a course on 'Field Ecology'. The tutor was the Warden, Brian S. Brookes, M.B.E., M.Sc. Our six full days were spent as follows:

Day 1	Pond Study	Day 4	Conservation
" 2	Moorland Study	" 5	Project
" 3	Forestry	" 6	Project & Report

Present were eight pupils from Loretto, three from St. George's School, plus two individuals, 13 in all, divided into five teams of two and one of three. I was paired for the six days with a Loretto schoolboy.

On our first day we examined the pond as a habitat, plotted it, measured temperature, movement, light, pH, oxygen content, examined the margin and its plants, the pond's inhabitants and considered its possible history.

When we went to the moorland we carried out a quadrat 1m² vegetation survey: five teams did eight squares and one team did 10. Combined with the quadrat survey was a point survey, in which one recorded the vegetation touched by a thin wire. Later when all our results were tabulated we were able to compare the results obtained by the two methods. In conjunction with this exercise we prepared a soil profile, taken in the vicinity.

In our forestry exercise we measured the heights of two species of tree, Japanese Larch and Douglas Fir, and their ages by taking core samples, and then calculated the growth rate.

The conservation exercise was carried out at the Birks of Aberfeldy on the Sunday. We were given six subjects to study and later drew lots to decide which one we had to lecture upon. The subject headings were: Conservation, Recreation, Planning, Commercial Development, Existing Situation, Current Activities and Visitors on the day. My partner and I drew the last subject. For most of the younger ones lecturing was a testing experience.

On Monday forenoon we completed our Conservation lectures and then we were free to start on our project. We chose to study the diurnal vertical movement, if any, of the diatom *Tabularia flocculosa*, at three spaced intervals of time (1745, 2200, 1100) at two levels, recording also light, temperature and weather. There was no evidence to suggest any movement: on the contrary they appeared to be concentrated at a lower level of stable conditions.

Apart from the value of the course in regard to the subjects mentioned there was a great deal of additional benefit to be acquired from the Warden's conversation. On our walks, at our rests he gave us information, explanations and above all he challenged our minds; he made us think.

A small group of E.N.H.S. members could gain much from taking such a course together.

This is not the place to go into a description of Kindrogan, but briefly I can say it is extremely well run and none should be put off by fears of spartan existence.

C.P. Rawcliffe

AUTUMN BRYOPHYTES AT KINDROGAN

22nd - 29th September 1982

With the aid of the Ian Sime Fund, I attended the course on mosses and liverworts at Kindrogan Field Centre, under the tutelage of Mr B.S. Brookes, M.B.E., M.Sc.

The habitats visited were grassland, moor, bog moss and mountain, each with its great variety of bryophytes. A week spent at each habitat would hardly have been enough.

The weather was most unkind. It was cold, the rain was incessant and at times torrential — three inches in one week. It was on such a day we went to the foothills of Ben Vrackie. After four hours we decided to call it a day, but not before seeing mosses of the siliceous boulders and rocks, and taking pH readings. Bryophytes can be indicator plants showing the relationship of the acidity or alkalinity of the soil with the flora it bears. They also show the relative purity of the atmosphere.

One of the mosses found, *Hedwigia ciliata*, named after its discoverer, has pale grey-green leaves with white hair points and straggling stiff tufts, making for ready identification. Another was *Grimmia doniana*, the commonest of the several species of *Grimmia* practically confined to mountains. Its blackish colour, pale capsules with orange conical lid, and the whole plant 0.5-1.0 cm high, also make it readily identifiable.

At one place where the pH was read by squeezing some water out of some sphagnum into a test tube containing an indicator chemical, it was found to be pH 4. The acid-loving mosses growing here were *Scorpidium scorpioides* and *Leucobryum glaucum* whose wide white cushions can cover extensive areas of moorland. Yet a few inches away, water from a runnel showed a reading of pH 8. Here calcareous-loving plants grew.

It was a fine day when we went to Glen Shee and climbed nearly to the summit of the Cairnwell. The Glen is now not only for the skier and botanist. Hang gliders were practising when we were there. One flier had found a friendly thermal and kept circling around at about 3000 feet while another flier landed in the middle of the road. It all looked a bit risky.

We were fortunate to find the two rare mosses which grow in this area. One, *Buxbaumia aphylla*, occurs sporadically in Britain. True leaves are absent although there is some colour in the protonema. It is largely saprophytic relying on the organic matter in the soil for its nutrition. The capsule on a one centimetre seta is very large in relation to the rest of the plant. The second, *Rhytidium rugosum*, is a rare moss of the calcareous grassland and limestone rocks. It is a robust plant with yellow green undulate leaves, curved and turned to one side at the shoot tips. Also seen in this area, growing in tufts of *Dryas octopetala*, were *Polytrichum alpinum* and *Polytrichum alpestre*, with its characteristic white tomentum that covers the stem.

The river was in spate when we went to Blairgowrie. To take our minds off the incessant rain we watched several poachers, on the opposite bank to us, fishing for salmon. They did not use a rod but a line which was thrown into the river and immediately pulled out again, a spinner was probably used as bait. We saw one fish hooked, about two feet long, grassed and then the fishers made a quick exit through the trees. Many of the bryophytes seen here grew on walls — *Grimmia* spp, *Tortula* spp and *Encalypta* spp. The uncommon liverwort, *Nowellia curvifolia*, with curved leaves and red stems, was growing on decaying tree trunks.

Two of the class members, one from Caithness, the other from Shetland, showed great interest in the Sphagnum species. These were studied at Dum Moss, and 13 species with some of their variants were seen. Sphagnum shows a definite zonation, from submerged plants in peaty pools to those that grow on drier ground. Some grow on top of hummocks found on other bog mosses. The identification of Sphagnum species is difficult and needs careful attention to microscopic detail. Found growing amongst the Sphagnum was a small liverwort, *Mylia anomala*, with yellow-green leaves on which were an abundance of gemmae. Also found here was *Polytrichum commune*, one of the tallest mosses, attaining a height of one foot. Country folk make use of this plant to manufacture brushes, for bedding and to weave little baskets. Some of these can be seen in the museum at the Royal Botanic Garden at Kew.

After a day in the field it was back to the laboratory and the microscope with talks on Ecology and the life cycle and structure of Bryophytes.

J. Carlyle

RATS AND THEIR HISTORY

(Prompted by R.W.J. Smith's observations on Black Rats reported in the 1976 Journal.)

Rats have been in the country for so many years that one is inclined to forget that they are introduced species, not native.

The Black, or Ship Rat (*Rattus rattus*) arrived first and may have reached Britain around the eleventh century. It probably originated in South-East Asia and spread from there along the old trade routes. This rat has various English names, all of which tell us something about it. The commonest name — Black Rat — can be misleading as there are three main colour variations. About half are totally black, others are brown above and grey below, or brown above and creamy-white below. The next most popular name — Ship Rat — implies that *Rattus rattus* is the only sea-going rat. It is certainly the one normally associated with ships, but the Brown Rat also reached this country by sea. Alexandrine Rat, not such a commonly used name, refers to the port from which it was thought at one time to have come. A fourth name is Roof Rat, for this rat, unlike the Brown Rat, is a good climber and will be found in the upper parts of buildings which the Brown Rat cannot reach. It is a rat of towns and buildings and seaports and of human habitation.

Before the arrival of the Brown Rat, the distribution of the Black Rat was fairly widespread through the country. But by 1976 the distribution map of Scotland shows it to be limited to the ports of Aberdeen, Dundee, Edinburgh,

the Clyde and two islands. In 1956, it was still present in one or two inland towns. Its presence on Westray is probably due to a shipwreck, and the same may be true of the Shiant Islands where the rats have learned to live on the cliffs as they do on Lundy and the Channel Islands.

The Brown Rat (*Rattus norvegicus*), also called the Norway Rat, the Sewer Rat and the Common Rat, was probably introduced on shipping from Russia around 1728-29. As it did not reach Norway until after its arrival in Britain its Latin name is unfortunate. Since its arrival it has spread steadily throughout the country and onto most of the islands. Unlike the Black Rat, there is little variation in its colour.

It may not be easy to differentiate between a Brown Rat and a brown coloured Ship Rat, or between a melanistic black coloured Brown Rat and a typical Black Rat. The latter is smaller and sleeker with a finer coat, larger ears and a longer, thinner tail. There are differences in the shapes of the skulls, and the Brown Rat has the larger.

The Black Rat is the more vegetarian of the two and is particularly fond of fruit, while the Brown Rat is more of a scavenger and will eat meat and fish, insects and worms as well as cereals and fruit.

Not only is the Brown Rat the larger, it is better able to withstand cold and so is less dependent on buildings for shelter. Also, it is a more willing traveller and covers greater distances on the ground. As it has spread throughout the country onto farms and refuse tips, along sewers and hedgerows, and into areas of dense cover near water, it has tended to oust the Black Rat from everywhere except dockyards and ports, and here the Brown Rat will be found at ground level and the Black Rat will occupy the higher parts of buildings and warehouses where its rival cannot climb.

Both rats breed readily producing at least four litters a year with seven to eight young in Common Rat litters and four to five in Black Rat litters. Young females are old enough to start breeding by the time they are three months old. The death rate amongst the young is very high, perhaps nine out of ten being killed by predators which include cats, dogs, foxes, weasels, badgers, owls and man. Few rats live longer than a year.

Brown Rats live in burrows on sloping ground, under trees, stones, or heavy undergrowth. Along streams they will oust the Water Vole and take over the holes and runs.

Rats are well-known carriers of disease. The organisms of Salmonella food poisoning can be carried in the gut. Leptospirosis (Infective Jaundice or Weil's disease) is transmitted by rats, and on occasion by Bank Voles, so it is as well for the inexperienced to have their hands covered when handling these, for the infection is passed in their urine.

Plague, or the Black Death, ran its deadly course for many centuries before the essential role played by rats was fully recognised. First there is an outbreak of the disease amongst the rats which have little resistance and usually die. The fleas on the rats become infected and carry the infection to man. St. Cuthbert is reputed to have had the disease and recovered. Early epidemics in Edinburgh are recorded in 1350 and 1362. In 1498, an epidemic reached such alarming proportions that the Town Council introduced quarantining for 40 days for travellers from Glasgow and forbade the entry of certain merchandise without a permit. Dogs and swine had to be kept off the

streets and markets were closed. Furniture and clothing from infected houses had to be washed in the Water of Leith.

A further severe outbreak in 1580 led to isolation of ships and their crews and disinfection of cargoes on the islands of the Forth. Inchcolm, Inchkeith and May Island are mentioned. Disinfection was done by exposing cargoes to wind and rain or washing in sea water. Ships were grounded at low tide and the seacocks opened allowing the rising tide to flood the ships.

The last known epidemic in Scotland occurred in Glasgow in 1900 when one in four of the patients died.

The presence of Black Rats on Inchcolm was first reported by R.W.J. Smith in the 1976 Journal. At a later date one was trapped on the island and in the 1977 Journal, Dr A.S. Clarke confirmed that the one caught was a blackcoated Ship Rat. Considering the methods used for cleaning out quarantined ships it is likely that most of the islands received a quota of these animals. Inchcolm seems to be the only Forth Island left with a colony, where perhaps human habitation has assisted their survival. As they are now leading a relatively harmless life on the island it is hoped that they will continue to survive there.

E. Farquharson

References

Comrie, J.D. (1932). History of Scottish Medicine.

Hamilton, David N.H. (1981). The Healers. A History of Medicine in Scotland.

Sighting of Common Lizard within the City Boundary, 1982

A small Common Lizard (Lacerta vivipara), green in colour, was seen several times from late April on the wall of the old Doocot Garden in Hermitage of Braid.

J.H.W. Young

Note: In 'A Guide to Edinburgh's Countryside', it was stated that the Common Lizard was to be found within the Edinburgh boundary but that it was unlikely to be seen on any of the walks and visits described. But in 1982 it was seen in Hermitage of Braid (Walk 2) as the note above indicates.

Please will members send in any other sightings to the Journal Committee.

(J.K.R.)

19.9.82 *On a windy, drizzly afternoon a flock of 75 Red-breasted Merganser were seen in Largo Bay. (C.S.)*

INHABITANTS OF SPHAGNUM

Sphagnum is the predominant moss of bog land. A film of water is held between the leaves of Sphagnum, and this provides a microhabitat for a wide variety of tiny animals. The animal groups range from rhizopods, ciliates, heliozoans and flagellates, all unicellular, to rotifers and small crustaceans. A good method of sampling these organisms is to press the wet moss with a foot and to collect the water that has gathered in the footprint.

Rhizopods

When the water is examined under a microscope, it is the rhizopods which dominate the scene and many species of rhizopods are found only in Sphagnum. The rhizopods are very similar to the amoebae, but these single blobs of protoplasm can make themselves a shell within which they can retreat. Some kinds simply secrete a chitinous coat while others, like *Diffugia*, embed sand grains into the chitinous coat.

It is puzzling to realise how a cell like amoeba can form such a neatly made sand grained shell. Gruber in the early 1900's observed that just before cell division, *Diffugia* takes up sand grains into its protoplasm in much the same manner as it feeds. Then when the cell is about to divide, half the protoplasm is extruded from the mouth of the parent shell and the sand grains migrate to the surface and form a neat shell identical to the parent. Cellular division is completed and the shells separate. Two shells lying mouth to mouth are frequently observed.

When rhizopods are on the move, several slender finger-like pseudopodia are extruded from the mouth of the shell and in amoebic fashion they creep over the surface of leaves etc.

Rhizopods feed on diatoms and spores of algae and usually there are plenty of these growing amongst the Sphagnum. (As shells persist long after the animal is dead, most shells found are empty.)

Flagellates, ciliates and a heliozoan

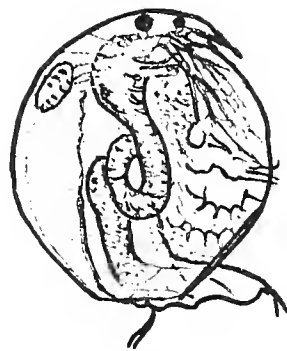
Flagellates have a whip-like flagellum which flails about and propels the creature through the water. The ciliates are covered in fine hairs which beat in unison giving the ciliates a fast swimming motion. The heliozoan, *Actinophrys sol*, remains suspended in the water as it has no means of locomotion. Although it cannot move far it is very successful in catching flagellates as food.

Crustaceans

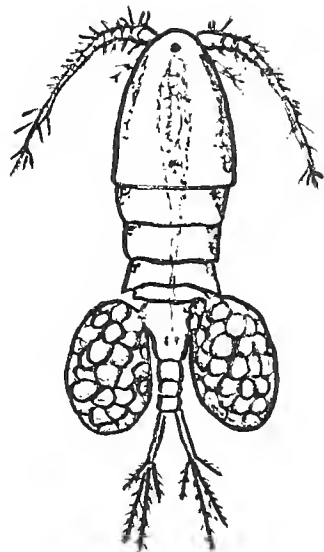
Chydorus sphaericus is one of the most ubiquitous of the small crustaceans being found in nearly all still fresh waters. It measures approximately 0.3 mm and is found frequently in great numbers in the Sphagnum water.

Copepods are small crustaceans abundant in sea water. Some genera, for example Cyclops, abound in fresh water and a few species of Cyclops measuring less than 1 mm frequent the water around the Sphagnum.

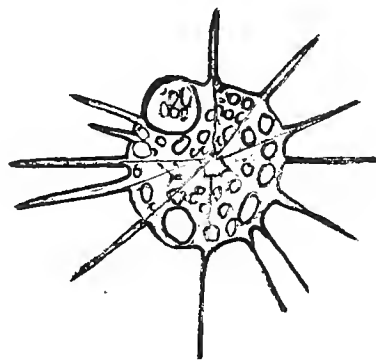
SOME INHABITANTS OF SPHAGNUM



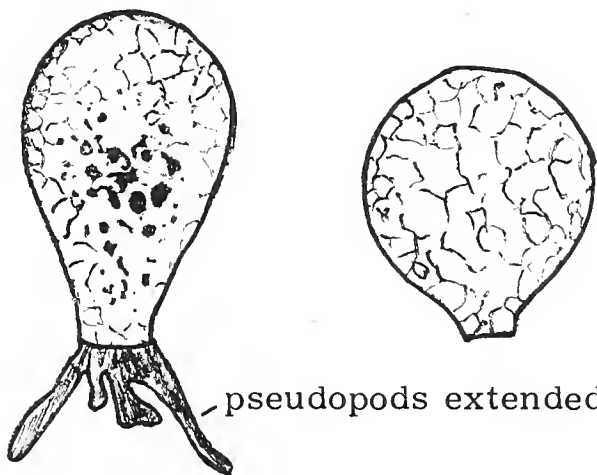
Chydorus sphaericus (0.3 mm)
(a crustacean)



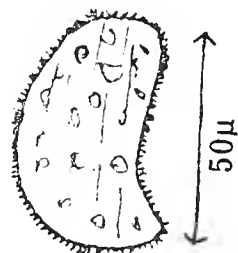
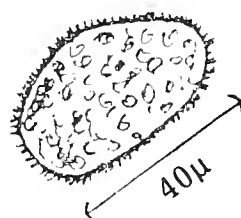
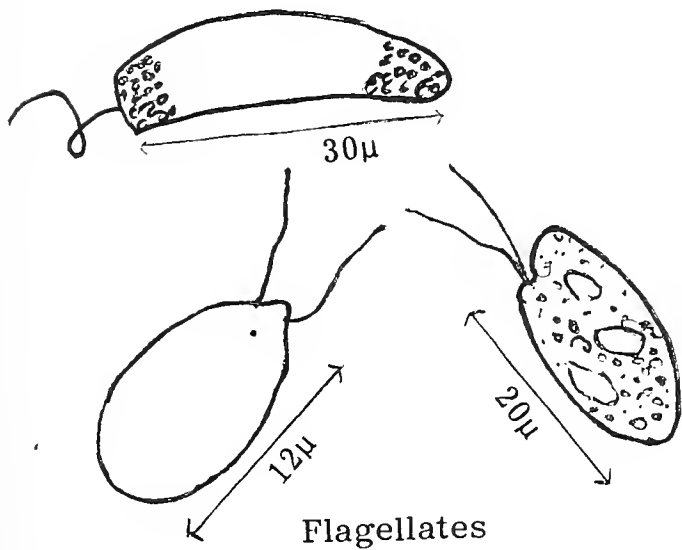
Cyclops sp. (<1 mm)
(a crustacean)



Actinophrys sol (60 μ)
(a heliozoan)



Rhizopods - 2 sp. (120 μ)



Ciliates

1 μ = 0.001 mm

NOTES AND OBSERVATIONS ON NATURAL HISTORY

Dutch Elm Disease — now a threat from Russia?

Since 1976, an aggressive form of Dutch Elm disease, which kills infected elms, has spread through Lothian. In Edinburgh, a strict disease control campaign has been maintained since the very first disease outbreak, and as a result the infection rate has been successfully kept at a very low level, despite the events in the surrounding countryside. However, the hot summer of 1982 suggested that this would stimulate the vector of the disease, the elm bark beetle, to even greater activity, to cause devastating problems within the City. Yet this was not the case. Indeed, although other significant events were recorded during the year, the lowest number of diseased trees since 1979, was registered, with a reduction of 51% on 1981.

In northern Britain, the disease is carried from tree to tree by the elm bark beetle, *Scolytus scolytus*. Another species, *S. multistriatus*, is the more common vector in the south. However, in the spring an alarming discovery was made in Musselburgh. A further species, *S. laevis*, was recorded. This is alarming, because this is a native of northern Scandinavia and Russia. It has never been recorded in Scotland before and only a few individuals have been found in northern Britain. How it came to be here remains a mystery but the significance of the discovery is, that while *S. scolytus* is at the edge of its range in the central belt of Scotland, *S. laevis* is capable of surviving much further north. Thus, being also able to carry the disease, it perhaps poses an even greater threat to our elms, if in fact it is widely distributed. Throughout the summer, beetles were collected for identification and we are still to discover whether this new beetle is widely established.

During this summer, 224 trees were infected within the City, compared with 435 in 1981. Yet, although this was a significant reduction in aerial infection, the number of trees that succumbed through the disease being transmitted via the roots from neighbouring trees, increased by 4%. Thus, a major concern is that there may come a time when more elms are lost in this way rather than through beetle feeding activities.

This reduction in diseased trees cannot be put down to the exceptional cold winter of 1981/82, since there were obvious signs that the beetles were unaffected by this, as shown by the steady progress of the disease outwith the City. The sanitation policy within the City is clearly effective yet, despite this, a milestone in the damage being caused by the disease was reached. In the late summer the first tree to be infected in Princes Street Garden was discovered.

While 1982 was a successful year for disease control it is clear that vigilance must continue. It is going to be a long task but it should ensure that the devastation experienced in the south will be prevented from occurring in Edinburgh.

J.C. Sheldon

21.9.82 I returned home to Corstorphine on the evening of the 21st September and went into the garden. I heard geese and saw a large skein flying north-west. Autumn had come! (M.B.H.)

Giant Hogweed - a curiosity or an obnoxious weed?

As a spectacular introduction to gardens in the late 19th century, *Heracleum mantegazzianum*, the Giant Hogweed, was kept in its place. With a flowering stem over 3.5 m in height and topped by heads over 50 cm in diameter, it was a curiosity which had its obvious attractions.

A native of the Caucasus Mountains, this plant now receives more than its fair share of public attention, for no longer is it just found within the bounds of the Victorian garden - it has escaped. Many garden escapes can be recorded on waste land or in hedgerows, but this one is different. Where it has established, on river banks, roadside verges or field boundaries, it can dominate the native vegetation to its total exclusion. Out of control it can thus cause considerable ecological imbalance. But this is not the feature of the plant that attracts such attention by the media each summer - and in 1982 the reporting was at its most alarmist.

The reason is that the sap contains a chemical, furocoumarin, and if any one is unfortunate enough to get this onto their skin, it destroys the natural screening from ultra-violet light. As a consequence, in bright sunlight the skin will burn and blister, a reaction which can be so severe as to require hospital treatment and several years to full recovery.

The fascination of the plant to children and flower arrangers, or encounters by walkers and anglers, has led to considerable alarm at the virtually uncontrolled spread of the weed. From the Borders to Grampian, many members will have come across Giant Hogweed. Its spread raises many questions. Why should it now survive so successfully outwith its cultivated sites; why is it spreading so far afield; why is it that our native flora yields to its invasion?

There has been little concerted effort to manage the plant in the past, primarily because cutting is ineffective. Now, however, there is an effective chemical to be used against it. As a consequence, more authorities are aware of how to treat the weed and campaigns are underway in various areas to eradicate the plant.

The scale of the problem in the Lothians was the subject of a survey during the summer and many members kindly assisted in this. Populations were recorded in many areas and very often these could be traced back to the gardens of the mansion houses from which they probably originated - but not all. But how fast is it really spreading?

The distribution of the plant in Edinburgh was surveyed by Clegg and Grace in 1974, and in 1982 the City was surveyed again on behalf of the Regional Council. Curiously, the recorded patterns of distribution are strikingly similar. Few new areas have been colonised in this time although some colonies have locally expanded, but then some colonies have completely disappeared - and not through any management interference.

Public concern associated with the spread of Giant Hogweed and the hazards associated with it, particularly in public places, is now necessitating action. But how serious is the problem, is it as dramatic as we are led to believe? Evidence suggests that it has been with us in the wild, for a long time, but perhaps we are only now being made aware of it, because of articles such as this. Certainly in Edinburgh there is little evidence to suggest that in an eight-year period it has spread as dramatically and as

fearfully as we have been led to believe. However, the successful establishment of such an exotic plant must be treated with real concern, and its management must take on increasing importance.

J.C. Sheldon

References

Clegg, L.M. and Grace, J. (1974). Transactions and Proceedings of the Botanical Society of Edinburgh, Vol. 42.

Hesketh, F.B. and Warr, S.J. (1982). "A Report on the Distribution of Giant Hogweed in Edinburgh". Lothian Regional Council.

Dr. John Sheldon, the Regional Ecologist, thanks members for the many invaluable replies which he received to the note about the distribution of Giant Hogweed circulated in August with the 1982/83 winter programme.

News from Hopetoun - 1982

Several knowledgeable visitors to the grounds around Hopetoun House have identified trees for us — the Rangers. One of our members (E.N.H.S.) pointed out the Dawn Redwood (*Metasequoia glyptostroboides*), a native of China. It is of great interest to botanists as it is the only living member of a genus which before 1944 was only described from fossils. It was discovered by Chinese scientists. It is a deciduous conifer which grows to about 115 feet in the wild. Male flowers had not been seen in Britain until recently when they were noted at Cambridge Botanical Garden.

A Professor of Botany from Bergen identified:

1. Narrow-leaved Ash (*Fraxinus angustifolius* spp *oxycarpa*). He writes, "This is probably the largest specimen on the British Isles of this subspecies which has a more Eastern distribution than the species. It is very rarely planted". The Narrow-leaved Ash is distinguished from narrow-leaved forms of Common Ash (*Fraxinus excelsior*) by its brown rather than black winter buds.
2. Maple with trifoliate leaves, the rare *Acer henryi*, introduced by Veitch from China. The Professor had never seen it before. He suggests that both these rarities should be particularly well cared for.

Two ferns were added to the list — Scaly Male-fern (*Dryopteris affinis* — was *D. borrieri* or *D. pseudomas*) and Lemon-scented Fern (*Oreopteris limbosperma*) not usually found in this sort of habitat — see pages 42-43 of Journal 1981. Both these ferns were probably planted.

Another plant found could also have been planted; along with grasses — a Woodrush (*Luzula luzuloides*) with hairy leaves, stem leaves long and grass-like, flowers white tinged with pink and red. It is found in woods and damp places chiefly on acid soil.

Fifty fungi have been added to the list at Hopetoun this year. The total is now 210 for the area around the House. Some have interesting smells:

<i>Tricholoma saponaceum</i>	- odour of kitchen soap
<i>Hebeloma saccharoliens</i>	- sweet odour suggesting burnt sugar
<i>Hebeloma crustuliniforme</i> and <i>Mycena pura</i>	- both smell of radishes when crushed
<i>Mycena leptcephala</i>	- smells of ammonia (Domestos)
<i>Lactarius glyciosmus</i>	- odour of coconut-scented milk

J. Carlyle

Some Observations on Fungi - 1982

A Morel fungus - *Mitrophora semi-libera* - in Colinton

On 20th April 1982, I found two morel fungi growing beside the old railway line at Colinton. They grew in the angle of the wall and the ground which was wet enough at that point to support some liverworts. My husband, Graeme, identified the fungi as *Mitrophora semi-libera*. This identification was subsequently confirmed by the staff at the Royal Botanic Garden, where one of the specimens has been preserved.

Mitrophora semi-libera, like the other morels, produces its fruiting bodies in the spring. It is an ascomycete, that is, it shoots its spores out from the upper surface of its cap. The cap of *Mitophora semi-libera* is a dark, mat brown. The stipe and underside of the cap are cream. The cap is furrowed with irregular parallel wrinkles, reminiscent of a dried prune. The lower edge of the cap is detached from the stipe, unlike the very similar morel, *Morchella elata*, whose stem is attached to the lower edge of the cap. The specimens we found were not entirely typical in that they both had rather short stems. Normally, *Mitrophora semi-libera* has a rather long stem and a small cap.

I am told that it is edible but I prefer to preserve it in white spirit, and six months later it still looks in very good condition. Altogether it has a strange delicate beauty which makes it a very attractive fungus.

H. Thom

- 23rd August *Agrocybe arvalis* found in field beside the Princess Margaret Rose Hospital.
- 28th August At Coylum Bridge in a wet part of the Rothiemurchus Forest amongst Scots Pine and Birch, *Suillus flavidus*, *Xeromphalina campanella*, *Leccinum holopus* and *Rozites caperata*, all seen on the same afternoon.
- 10th October *Amanita crocea* growing at Fin Glen, near Lennoxtown.
- 29th October *Amanita umbrinolutea* growing in woods by Bavelaw Burn close to Harlaw Reservoir.

E. Farquharson

Feral Mink

I have been re-reading the excellent article by P.W. Brown in the E.N.H.S. Journal for 1981. We have a family of feral mink at the bottom of the garden. On 14th July, I was in the Belgrave Crescent gardens overlooking the Water of Leith near the West Mill when I was attracted by the shouts of some boys playing in the river. They said there were ferrets on the banking and they had caught one which had bittem them. I looked and soon saw two fully grown mink with beautiful black coats. A further search disclosed five or perhaps six young ones with grey-white coats. They were exploring the many holes under the large stones which line the river bank. They paid little heed to the boys and I was able to look down on them from some twelve feet away. The two grown ones marked a tree stump in turn and the scent was strong for several days thereafter. They pulled down a branch of a flowering currant into a hole between the stones. At intervals the adults raced up and down the river and seemed to be enjoying themselves in the sunshine. I got a glimpse of one the following day but then they seemed to disappear.

Today, 27.9.82, some ten weeks later, I watched for ten minutes a young one, now nearly fully grown, with a dark grey coat as it made its way up river; at times on the bank, then taking to the water, first on the surface, then under it. It poked into several holes in the banking then climbed a very steep bank without a pause. It came to some ten yards from me but paid no attention although it must have known I was there. It went to ground under the roots of a tree.

K. Sanderson

Forth Island Bird Counts - 1982

	Craigleith	Lamb	Fidra	Inchkeith	Inchmickery
Fulmar	95	1+	107	634	3
Cormorant	60	90+			(34)
Shag	344	230+	59	6	22
Gt Bl Back	3	1 bird			
Lesser Bl Back	X	X	50+	X	(80
Herring Gull	X	X	250+	X	(
Kittiwake	c670	?116	483	240	
Common Tern			44. (22+		415
Arctic Tern			(15+		
Roseate Tern					14
Sandwich Tern					478
Razorbill	57	X	c32	25	
Guillemot	1800+	bds 1500+	65+	8	
Puffin	c2500		125	650	

Fulmar - occupied sites not necessarily breeding

Puffin - all birds on land and offshore

Guillemot - on Craigleith and Lamb all birds ashore
 All others - pairs or nests

Inchmickery counts by kind permission of R.S.P.B.

The weather for the trips started off well culminating in a heat-wave on the Bass. On the following day at Craigleith, the south-east wind backed to the east bringing thick fog and, for the rest of June, the wind remained easterly. At the third attempt we got to Fidra but could only helplessly circle the Lamb unable to land because of the heavy swell.

Although there are no counts from Lamb, there is obviously no diminution in the latest increases of breeding birds. On Fidra and Craigleith Shags are up 36% following on last year's 40% — not quite doubling their strength in two years. The impetus has spread to Inner Forth with 22 pairs now nesting on Inchmickery. It is interesting that, although the first Shag nest for Inner Forth was on Inchkeith, the low-lying islands of Inchmickery and Carr Craig are now proving more attractive to the birds. A similar situation occurred in East Lothian with Craigleith being colonised first then, once a foothold had been obtained on Lamb, the population there built up much more rapidly than on the larger island.

Kittiwakes, too, are recovering especially on Inchkeith. This inner-most breeding colony suffered most heavily during the recent decrease, but the 23% increase there, if continued for another two years, would bring numbers back to their former peak. Fulmar are more difficult birds to pin down as not every counted 'site' with a sitting bird has an egg. However, the number of sites this year is more than a quarter up on 1981 so they seem to be doing well.

There were rather fewer pairs of terns on Fidra than last year but they seem to be hatching off well and (perhaps under their protection?) a pair of Ringed Plover has returned after an absence of some years. On Inchmickery the R.S.P.B. report slightly better news of Roseates with 14 pairs present but they are still very much on the danger line.

A very obvious casualty of last winter's cold spell was Tree Mallow with relatively few flowering plants on both Bass and Craigleith. However, there is plenty of new growth so recovery will not be a problem.

R.W.J. Smith

Some Bird Observations - 1982

- 31.1.82 Immature Glaucous Gull at Musselburgh.
- 21.2.82 33 Whooper Swans near Longniddry.
- 27.3.82 About 30 Pintail off Skinflats.
- 6.3.82 Southern Cormorant at Belhaven Pond.
- 10.4.82 Male Snow Bunting in summer plumage at Barn's Ness.
- 24.4.82 22 Mute Swans on River Esk at Musselburgh.
- 7.5.82 Cuckoos had arrived at Callander.
- 7.6.82 Great Spotted Woodpeckers feeding young in nest at Roslin Glen.

- 12. 6.82 Young Common Sandpiper swimming down a stream at Horseupcleuch.
- 22. 7.82 Yellow Wagtails at Musselburgh.
- 15. 8.82 Black Guillemot in winter plumage off Gullane Point.
- 25. 8.82 Four Arctic Skuas at Musselburgh, and 7 Whimbrel.
- 8.10.82 Two Barnacle Geese at West Fenton, with several thousand Pink-footed Geese.
- 7.11.82 Brent Goose and Swallow at Aberlady.
- 10.11.82 Great Spotted Woodpecker at Hermitage of Braid.
- 14.11.82 20-25 Snow Buntings at Musselburgh. Also a few Sandwich Terns.
- 28.11.82 Peregrine, with prey, at Aberlady.

M. Mowat

Migration at St Abb's

To most people, the name "St Abb's" probably conjures up a picture of high cliffs, stormy seas and, in summer, hosts of nesting seabirds. But, for ornithologists, the more interesting part of the Nature Reserve, in spring and autumn, is round the Mire Loch; and mid-October, 1982 was one of the most exciting migration seasons on record.

On 12th October, we hoped for an exceptional day, for there had been an early mist, and now a fairly fresh east wind, following a period of westerlies. We were not disappointed. In the reeds by the Loch, we caught sight briefly of the rare Dusky Warbler (*Phylloscopus fuscatus*), while overhead large parties of Redwings (*Turdus iliacus*) "seeped" their contact note. In the hawthorns and other bushes we spotted migrating Willow Warblers (*Phylloscopus trochilus*), Chiffchaffs (*Phylloscopus collybita*), Blackcaps (*Sylvia atricapilla*), Pied Flycatcher (*Ficedula hypoleuca*), and Bramblings (*Fringilla montifringilla*), while Redstarts (*Phoenicurus phoenicurus*) jerked their tails on fences and walls. But, about mid-day, the greatest concentration was in the trees on the south-east of the Loch. Here were literally hundreds of Goldcrests (*Regulus regulus*), fluttering like hummingbirds as they fed among the leaves. So intent were they on food, that they appeared to have no fear, and indeed one flew round my head and almost landed on me! But there was still more excitement to come — the Pallas' Warblers (*Phylloscopus proregulus*) (a rare Asiatic species, resembling a Goldcrest, but with a yellow crown and eyestripe, and marked yellow rump). This was a day to please the most avid of "twitchers"; but, for me, the main attraction was the "charm" of Goldcrests.

E. Landells
M. Mowat

Introducing Aeshna Dragonflies

The Common Aeshna, *Aeshna juncea* (pronounced yun-see-ah) is well distributed throughout Britain particularly in the more acidic waters of the north. It is one of our largest dragonflies and certainly the largest to be found in Scotland. It is a long, slender insect with blue and black bands about 3 inches long and a wingspan of nearly 4 inches. In the Lothians

it is common in the many peaty ponds of West Lothian but doesn't seem to get further east than about Mid Calder. In Peeblesshire it breeds near Eddleston and ponds such as at Macbiehill, on Penicuik Policies, seem suitable.

This puzzling distribution can probably be explained by the lack of suitable breeding sites, and perhaps by the difficulty of colonising isolated ponds so far from the breeding areas. I have seen *A. juncea* many years ago at Rosslynlea Reservoir and it may well have bred on a tiny peaty pool on the moor above. This pool disappeared during open-cast works. There are also old records from the Pentlands at the waterfall above Loganlea. Could it have bred in the Bavelaw/Threipmuir area? If it did perhaps the low water levels of the post-war era and infilling and draining of small ponds may have caused its disappearance.

However, there seems no real reason why this fine insect should not delight us once again in Midlothian if it were possible to introduce it into one or several unpolluted ponds in which the water level remains reasonably constant. As an experiment, some larvae (or nymphs) were put into Milkhall Pond (a disused reservoir and an S.W.T. reserve) in 1981 and 1982. After some initial and disappointing attempts to find larvae, we located a pond in West Lothian where every sweep of the net brought up 1-3 nymphs — though they were rather difficult to find among the accompanying sphagnum. The nymphs came in 3 size-groups — tiny ones, 20-35 mm and 38-47 mm. This was at the end of May and obviously there were 3 age groups, those newly hatched from last year's eggs, second summer and third summer larvae with obvious wings ready to leave the water in July or August. All but the tiniest larvae could be easily sexed by the relative size of the swellings on the underside of the 9th and 10th abdominal segments. Those of the females are much larger.

The first 16 larvae we collected in 1981, and examined after we arrived home, proved to include 7 females but only 1 male well enough developed to emerge that year. A hasty trip was made to find another 2 males! In 1982 we were better organised and put into Milkhall 9 full grown nymphs of each sex. All that now remained was to hope that we would have some evidence of emergence since, on emerging from the pond, each dragonfly immediately leaves it for a fortnight or more to feed and mature.

On a warm, sunny day at the end of August in a good area the insects are obvious enough. The males patrol the pond edge examining the rushes closely looking for a female. The females only visit the pond to find a mate or to lay eggs. If coming in to lay they fly with the tail drooped which inhibits attention from the males. When two males meet there is a territorial chase and one retreats but on occasion may be knocked into the water or suffer wing damage. If a male finds a female he attempts to grab the back of her head with his claspers (at the tail end) and carry her off trailing behind him "in tandem" to mate away from the pond. If she is egg-laying she resists this by hanging on to the vegetation and he may struggle for a bit before releasing her and flying off to renew his search. Alternatively, the hapless female may be pulled from her egg-laying position half-immersed in the water and leave, willy-nilly, with him.

Although the reproductive organs of both sexes are near the tip of the abdomen (as in other insects), the male dragonfly has a (unique) secondary apparatus below the 2nd and 3rd segments of the abdomen which he charges with sperm. During mating, the female curves her body down

and forwards forming a circle with the abdomen of the male. This often happens as the pair fly off, giving a remarkable silhouette. Occasionally, and presumably as the male attempts to swing the (possibly unwilling) female under him, the pair will cartwheel round several times in succession, probably backwards, while all the time flying away from the pond.

Sadly, this intense activity ceases abruptly whenever the sun disappears and our visits to Milkhall seemed always to coincide with overcast skies. However, on 17th September this year we were delighted to find a male actively in territory at the top end of the pond. We could not spare the time to watch for a female arriving but, after some hours of conservation work at the other end of the reserve we found the male still searching. The pond is obviously suitable for dragonfly survival and territory and hopefully for breeding. As there is a 3 (or 4)-year life-cycle, some larvae will have to be brought in annually until a viable population is established.

It should be stressed that this is not an attempt to introduce a new species to the area but to try to undo some of the damage caused by human activity in the last 100 years. Habitats are vanishing under our noses and ponds, particularly, are drying out or being drained. Of those that remain, some dry out occasionally and many are polluted making them unsuitable for *Aeshnas*.

The R.S.P.B., with vision and determination, has achieved spectacular success in bird and other conservation. Whereas they have large reserves and sufficient funds to implement their management plans, local conservation groups have a few tiny reserves and little available cash. Should they not therefore try to maximise the wildlife benefit of these small areas? Perhaps their management could include measures to extend the present distribution of some of the animal and plant species which are declining locally. Dragonflies, newts, slow-worm, lizard and Water Spider are obvious candidates. Make up your own list!

R.W.J. Smith

Observations on Insect Movements

Prolonged spells of sunny, warm weather favour the breeding success and subsequent dispersal of many species of insects. The drying up of ponds and the resulting lack of insect prey have been considered to cause wide-scale movements of dragonflies from the continent.

During 1982, some of the regular migrant lepidoptera, such as Silver Y moths, Red Admiral, Peacock and Painted Lady butterflies have been seen in many areas by several observers. An early Red Admiral was seen in the John Muir Country Park on 23rd May (T.B.). A Peacock butterfly was spotted in the Hedderwick Dunes on 3rd August (A.C.). A late Peacock was at Threipmuir Reservoir on 26th September (T.B.). A Small Tortoiseshell, a Red Admiral and a Silver Y were seen in the John Muir Country Park on 17th October, and a Red Admiral caterpillar was found (A.C.) on 4th September near St. Baldred's Cradle.

Although butterflies are conspicuous, their actual migratory flights are less often reported. Over Gladhouse Reservoir on 16th September, a warm, sunny day with light south-west wind, we counted in 1½ hours 10

Red Admirals and 5 others, that may have been this species or possibly Small Tortoiseshell, flying low over the ground, steadily southwards. It was noticeable that there were no Red Admirals feeding among the other butterflies beside the reservoir.

As with migrant birds, movement may be detected when the unexpected turns up. On the 8th June, at the Marl Loch on Aberlady Nature Reserve, a medium-large dragonfly, which was thought to be *Libellula quadrimaculata*, was seen briefly (T.B.). This is a classic migrant and there is no known breeding area in the Lothians. On the 8th August we (T.B. and E.S.) watched a red dragonfly, a species of *Sympetrum*, flying round a tiny pond on the Tynninghame estate. It alighted and sunbathed on dead wood several times but, although we studied it through binoculars for about 15 minutes before it flew off, we were unable to identify it. No *Sympetrum* had previously been recorded on or near the estate. The nearest known breeding ground of *Sympetrum striolatum* is the Marl Loch at Aberlady Nature Reserve (see note on page 30), but at the time in question no *Sympetrum*s there had apparently emerged from the nymphal stage, far less had any male acquired its mature red colouring. The only other red *Sympetrum* species that breeds in Scotland is *nigrescens* and it occurs in the north and west. Other much rarer red *Sympetrum* species occur in the south of England. The dragonfly at Tynninghame in our estimation could only have been a long-distance traveller. A few days later, on 12th August at Tailend Moss Nature Reserve, near Bathgate, after very heavy rain, I saw for about 5 seconds a similar red *Sympetrum* fly over the Moss. It would be interesting to find if any other observers saw red dragonflies in August.

Large blue and black marked dragonflies were reported on the coast as follows:

- | | |
|----------------|--|
| 13th September | One over the rock pools on the shore in the John Muir Country Park. (B.R.) |
| 18th September | A definite <i>Aeshna</i> sp. was seen at the Marl Loch. |
| 25th September | Two males were seen, one buzzing the other, over the salt marsh at Heckies Hole. (A.C. & I.S.) |
| 3rd October | At the St. Abbs Nature Reserve, one was seen by the Warden in his garden. (S.W.) |

All of the above were probably the same species. They may have been *Aeshna juncea*, a species which breeds commonly in the west and north of Scotland. No species of *Aeshna*, to the best of our knowledge, has previously been recorded in any of these areas.

Also, on the morning of 20th September, the two John Muir Country Park Wardens saw a black dragonfly resting on vegetation by the brackish water at Heckies Hole. This dragonfly was almost certainly *Sympetrum scoticum*, previously unrecorded from this area. Single specimens have turned up at the Marl Loch in previous years.

On 22nd September, T.B. saw a male *scoticum* at Bavelaw Marsh, in the Pentlands. This is also a new record for that area.

News has just reached us of a Camberwell Beauty butterfly having been found in East Lothian on 15th October. This magnificent butterfly

is a scarce migrant from Scandinavia and cannot overwinter in Scotland in the wild.

E.M. Smith

Observers

T.B. - Tom Boyd
A.C. - Alister Clunas, Warden
E.S. - E.M. Smith
B.R. - Brian Robertson, a
local birdwatcher

I.S. - Ian Strachan, Assistant
Warden
S.W. - Sephen Warman, Ranger-
Naturalist

Sympetrum striolatum - a Red Dragonfly at Aberlady

Aberlady is the most northerly breeding station in Britain for the medium-sized red dragonfly, *Sympetrum striolatum*. In 1981 it was seen in good numbers both at the Marl Loch and the Dune Slacks, but there has been a drastic decline this year. One factor causing the decrease may have been the drying up in both autumns of the Dune Slacks, but this problem did not affect the Marl Loch.

In 1981, at least five were seen at the Dune Slacks on 18th July and there were 35+ there on 8th August and later. In September, 18+ were noted at the Marl Loch with at least four females egg-laying during one visit. This year none was seen at the slacks. At the Loch they were first reported in mid-August by the Ranger with a pair egg-laying on 11th September. The maximum seen was a pair and two extra males on 25th September.

One possible cause for this dramatic decrease at the Marl Loch is the extreme cold spells of the previous winter which could well affect a species at the northern end of its range. A related species, *S. scoticum*, which is widespread in Scotland, overwinters in the egg stage. *S. striolatum* overwinters as a tiny larva in the bottom mud and may well be susceptible to extremely cold winters. This factor could be the major one limiting its northern distribution. It is possible that this species could, in the past, have died out at Aberlady during prolonged cold winters and then re-colonised. Fortunately, a few survived this year and hopefully numbers will recover in 1983.

T. Boyd
E.M. Smith

Some Lepidoptera in 1982

(a) Butterflies

Hot spells in early spring and in July have meant a good year for butterflies and moths.

It began for me in spectacular fashion on the 19th April with 30-40 Peacock in wooded Glen Screel (Castle Douglas). Five days later, a pair of Orange Tip appeared on the Esk at Musselburgh while I saw six Pearl-bordered Fritillary near Braemar on the 5th June.

Surely the Small Tortoiseshell has never been so common in the Lothians as this July. Though a common species, its behaviour is always worth noting. On the 20th, one appeared at approximately every half-mile interval along the Old Biggar Road from Dolphinton to Ninemileburn while I picked up 15 on the two miles of main road from there to Silverburn, killed presumably by passing traffic. On 1st August, I saw one crawling under the stones of the cairn, 2169 feet high on Birkscairn, Peebles, just two minutes before a thunderstorm broke.

The Common Blue turned up in a few sites new to me on Arthur's Seat and on the fringes of the Pentlands, while Meadow Brown perhaps seemed more numerous because I now look at them more closely in the hope of finding the Ringlet (rather similar in appearance) which disappeared from the Edinburgh area about 1900. I did see one, however, near a burn on Lauder Common (Natural History outing of 7th August). On the 22nd, two very bedraggled Scotch Argus were surviving — just — in Glen Luss.

(b) Moths

On the 6th April, I picked up an Emperor Moth (*Saturnia pavonia*), newly emerged from the pupa case, at Craigentarrie, Threipmuir, and on 18th July a Garden Tiger (*Arctia caja*), similarly fresh, lay at my feet at the No. 8 bus terminal at Gilmerton. On the 19th June, many of the glossy cigar-shaped pupae of the crimson Six-spot Burnet (*Zygaena filipendulae*) were seen high up on grass stems near the car park on the Natural History John Muir Country Park outing.

The above three moths are often mistaken by the public for butterflies.

W.B. Grubb

More Sightings of Butterflies

7.5.82 Red Admiral butterfly in very tatty condition, seen resting on a ploughed field about half a kilometre north of Cove Bay (Aberdeen/Kincardine boundary area) near to edge of cliff in perfect sunny weather. This is surely unusual as it must have hibernated during the very cold winter.

M.B. Usher

29.5.82 Two Orange Tip butterflies were seen on the Borthwick Circuit.

E. Hamilton

6.8.82 On this mild, sunny day the following butterflies were seen on the Red Moss, Balerno, on the rough grassland south of the aqueduct: Small Copper, Small Tortoiseshell, Red Admiral, Green-veined White and Small White.

J.K. Raeburn

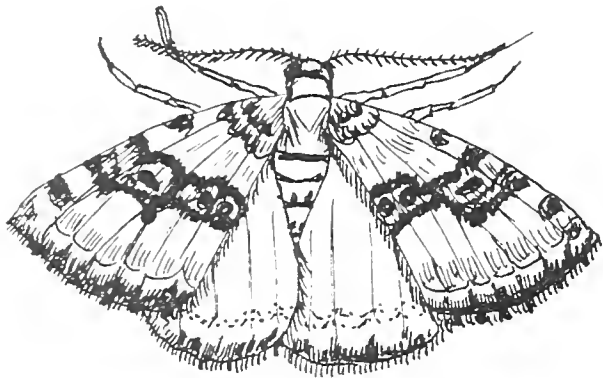
25.8.82 Dozens of Red Admirals, especially on the old Pencaitland Railway line.

13.9.82 On this fine, warm afternoon at 5 pm I saw four Red Admiral butterflies in my Corstorphine garden. They were enjoying the juice of the fallen ripe pears. The next day, I never saw more than two. Then I was away from home.

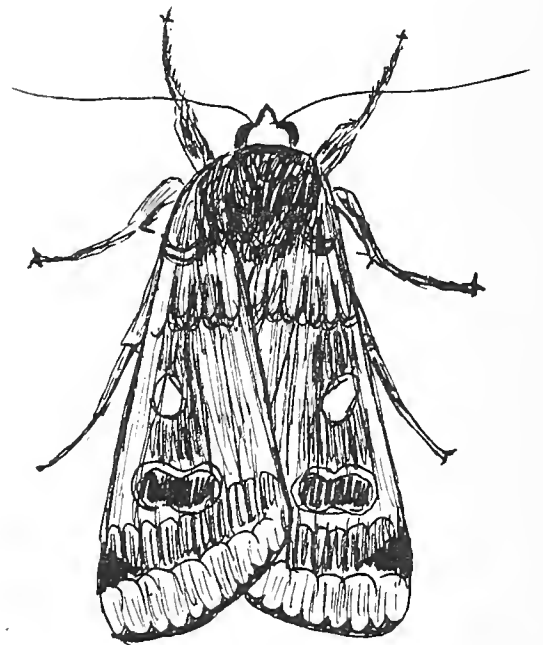
M.B. Herdman

Two Common Moths

From observations during the daytime one might conclude that we have a greater variety of butterflies than moths. Moths tend to be less conspicuous and they fly at night. Over the last three years (using a mercury light trap), I have identified over one hundred different moths in an Edinburgh garden, but I have seen only six different kinds of butterflies. I want to describe two moths which can be seen during the daytime, the Silver-ground Carpet moth (*Xanthorhoe montanata*) and the Large Yellow Underwing moth (*Noctua pronuba*).



Silver-ground Carpet Moth
(x 2) ♂



Large Yellow Underwing
(x 2) ♀

The Silver-ground Carpet moth can be found resting on foliage during the day and flies up when disturbed. It is particularly noticeable flying during the evening. It is found in June and July. It is smaller than most of the common butterflies and when resting sits with its wings spread flat and part of the underwings showing. The ground colour is silvery-cream with soft brown markings. There is a continuous band of darker brown markings across the upper wings. This is a very pretty little moth.

The Large Yellow Underwing, one of the larger moths, looks less obviously attractive. It can sometimes be found feeding on flowers during the day. It is very conspicuous when surprised in the undergrowth and takes to the wing. One sees a vivid flashing of orange, not yellow as the name suggests, but on locating the moth it appears to be shades of brown. These Noctuid moths all sit at rest with their wings folded to cover the underwings.

It is the underwings which are bright orange with a narrow black margin and they exhibit 'flash colouration'. This is supposed to distract any bird or other animal which might pursue the moth, and then the camouflaged upper wings ensure that the moth blends into the background and apparently disappears.

There is a variation in the darkness of the upper wings but the markings on them can usually be seen. This moth is found in June and July and then a second brood appears in September and October.

When identifying live moths, one source of difficulty is that the books usually illustrate the moths with the two pairs of wings widely spread, to show what they are like. In life many moths, like the Large Yellow Underwing, rest with their underwings completely hidden. Their resting position gives a good indication of their genus. Both these moths show the thread-like antennae which contrast with butterflies' clubbed antennae. In the diagram, the Carpet moth's antennae are feathery, which distinguishes it as being male.

H. McHaffie

Reference books

Collins Hand Guide to Butterflies and Moths

Octopus: Butterflies and Moths

Blandford: Moths in Colour

and the most useful: The Moths of the British Isles -
Richard South, 2 volumes (Warne & Co.)

Weeds in an Edinburgh Garden

While I was weeding in the garden early in the year, it occurred to me that I was pulling up lots of weeds which I did not recognise. They were just a couple of green leaves on a stem, often so immature that I could not identify them. Of course, it makes good gardening sense to pull out all weeds before they develop and set seed. "This year's seeds, seven years' weeds."

But what exactly was I pulling out? It was easy enough to recognise the commonest weeds. In our garden adjoining Comely Bank Avenue they are Broad-leaved Willowherb (*Epilobium montanum*), Broad-leaved Dock (*Rumex obtusifolius*), Common Chickweed (*Stellaria media*), Dandelion (*Taraxacum officinale*), Cleavers (*Galium aparine*) and Groundsel (*Senecio vulgaris*) in that order. There are a few *Hypericum* sp. seedlings, but as far as the rest I honestly had no idea what I was pulling out. So I decided, as an experiment, to leave one area of the garden unweeded, that is to pull out only the recognised weeds. There were a few surprises in store.

The soil was completely choked with weeds. One was the delightful Purple Toadflax (*Linaria purpurea*), a medium-sized plant with blue snap-dragon-like flowers in a long spike. Now that I recognise this weed in its early stages of growth I realise that it is quite common in the district. There are numerous young plants in cracks in the pavement and the gutter, but only a few, those in gardens, actually in flower.

Another surprise was the number of garden plants which seeded themselves. These include *Laburnum* sp., *Fuchsia* sp., *Astilbe* sp. and a Lily which grew to about fifteen inches high but did not flower.

Perhaps the most interesting was a low growing plant with creamy white petals and prominent yellow anthers. I identified it as Black Nightshade (*Solanum nigrum*). This plant is common in the south of England where most flower books appear to be written, but rare in the north. When I enquired at the Royal Botanic Garden how common it was I was told that it had not been found in the Lothians since 1910. This cast doubt on the identification, but I was pretty sure that it was not a white form of Bittersweet (*Solanum dulcamara*), which was one suggestion made. Not wishing to disturb my specimen I set out to see if I could find any more growing in the district. After all, mine was unlikely to have reappeared in isolation after a seventy-year gap and a leap from Portobello where it was last recorded.

Luckily, I soon found two more in gardens quarter of a mile away, and a piece of the larger specimen was duly identified by a member of the Royal Botanic Garden staff as *Solanum nigrum*.

I can't claim that the moral is don't weed your garden — there is temptation enough to be lazy as it is! But it was an interesting experiment and one which luckily had a worthwhile result.

H. Thom

Some Sightings of the Grey Heron

On Sunday, 24th October, at about 2.15 p.m., I was walking through the Botanic Garden. My attention was drawn to a number of people standing perfectly still near the edge of the pond, obviously watching something of interest. On approaching, I found this to be a Grey Heron. It remained motionless for a few minutes more then flapped off and settled on the old boat in the pond, staying there for quite a long time. It was a great surprise to me to see a heron in the Botanics but a bystander told me he frequently saw a solitary Grey Heron in the Warriston, Canonmills, Puddocky region — all near the Water of Leith and the Botanics.

Next day, I spoke to one of the Garden attendants who said he had worked there for about ten years and had frequently seen a solitary Grey Heron, especially early in the forenoon when few people were about. He had also seen a Night Heron from time to time but believed this had escaped from the Zoo and returned there in due course of its own freewill.

The attendant also mentioned he had not seen a Hawfinch for about four years in the Garden nor a Kingfisher for about two. Some of our members may have been more fortunate.

A.M. Davidson

EXCURSIONS — 1982

Key for excursions:

<i>B</i> - botany	<i>E</i> - entomology	<i>Ff</i> - freshwater fauna
<i>O</i> - ornithology	<i>S</i> - shore	<i>ML</i> - mosses & liverworts
<i>G</i> - general	<i>f</i> - fungi	<i>Ge</i> - geology

Day excursions and weekends

23 Jan	Pentland walk from Torphin	<i>G</i>	Mrs H. Miller
20 Feb	Walk in Balerno area using map and compass		Mrs M. Clarkson Miss F. Howie
20 Mar	Torphichen & Bowden Hill walk	<i>G</i>	Mrs S. Litteljohn
24 Apr	Catcune, Borthwick	<i>G</i>	Mrs J. Robinson
1 May	Leaderfoot area	<i>G</i>	Mrs M. Watson
8 May	Barns Ness	<i>O</i>	Mr V. Lough (Warden)
15- 18 May	Newton Stewart weekend		Miss E. O'Donnell Miss A. McCafferty
22 May	Buteland Farm circuit	<i>GO</i>	Mr C. Rawcliffe
29 May	Borthwick circuit	<i>OB</i>	Mrs E. Hamilton
5 Jun	Bass Rock with S.O.C.	<i>O</i>	Mr A. Brown
6 Jun	Lamb & Fidra with S.O.C.	<i>O</i>	Mr A. Brown
12 Jun	Craigleith Island with S.O.C.	<i>O</i>	Mr A. Brown
12 Jun	Chatelherault & Avon Gorge	<i>G</i>	Mr J. Brockie
19 Jun	John Muir Country Park		Mr A. Clunas (Warden)
26 Jun	Selkirk, Ettrick & Yarrow	<i>B</i>	Mr A. Smith
3 Jul	Ballinluig shingle beds	<i>B</i>	Dr R. Begg
10 Jul	Dalgety Bay to Aberdour	<i>B</i>	Mr J. Carlyle
17 Jul	Keltney burn	<i>B</i>	Dr R. Smith
24 Jul	North Esk Reservoir	<i>G</i>	Mr W. Clunie
31 Jul	Yetholm circular walk	<i>G</i>	Mrs J. Baston
7 Aug	Lauder Common	<i>B</i>	Miss J. Raeburn

14 Aug	Dobb's Lynn	Ge	Mr J. Bunyan
21 Aug	Dumyat	B	Mr J. Carlyle
28 Aug	Lammermuirs circular walk	G	Miss B. Gordon
4 Sep	Gullane & Aberlady	B	Mr C. Pountain
11 Sep	Peebles circuit	G	Mr A. Dickson Mr G. Bell
18- 20 Sep	Pitlochry weekend		Miss B. Gordon Miss M. Abel
25 Sep	St. Abb's	O	Mr S. Warman (Ranger)
2 Oct	Harlaw Reservoir with Botanical Society of Edinburgh	f	Mr M. Richardson
13 Nov	Gartmorn Dam		Mr I. Nicol (Ranger)
11 Dec	Musselburgh Lagoons & Kilspindie with S.W.T.	O	Mr C. Pountain
27 Dec	Coastal walk & sausage sizzle		

Evening excursions

5 May	Craiglockhart, Happy Valley	G*	Mrs J. Georgeson
12 May	Braid Hills	G	Mrs E. Farquharson
19 May	Cramond	OB	Miss M. Mowat
26 May	Swanston	G	Miss N. Henderson
2 Jun	Warriston Cemetery	G	Miss G. Coleman (ERC)
9 Jun	Slateford — old railway line	B	Mrs P. Bell
16 Jun	Blackford Hill & Hermitage	O	Mr G. Carse
23 Jun	Polton area	Ge	Mr W. Baird
30 Jun	Erraid House, Biggar Road	ML	Miss H. McHaffie
7 Jul	Musselburgh Lagoons	O	Mrs M. Robertson
14 Jul	Slateford Dell	Ff	Miss E. Gillespie
21 Jul	Colinton Dell	B	Miss J. Raeburn
28 Jul	Brunstane to Fisherrow	G	Miss B. Gordon
4 Aug	River Esk at Musselburgh	G	Miss E. O'Donnell

*cancelled.

Longevity in House Plants

I have a Begonia plant bought in a Princes Street chain store. It is still a strong, healthy specimen covered with flowers. The label on the pot reads:

SELL BY AUGUST 2nd 1752

Is this a new Scottish record?

H.T.

REPORTS AND EXTRACTS FROM REPORTS

Full lists of animals and plants seen on outings and excursions are not included in the reports but are lodged with the Records Secretary.

Outing to the Catcune area - 24th April 1982

We were fortunately blessed with glorious sunshine for the first E.N.H.S. summer excursion — a circular walk from Catcune. From Catcune Mill the party walked along the dismantled railway line leading to Tynehead, branching off down into Crichton Glen, where we stopped for lunch — allowing time to explore the Glen itself and the opportunity to visit Crichton Castle to view the picturesque piazza. We retraced our steps across the old railway line, walking down through the woodland into Borthwick behind the Castle. We were met with the unusual sight of bantams in the graveyard and geese in the stream behind the church. A brief stop was made to view the remaining original 15th century section of Borthwick Church, currently undergoing extensive repairs of damage due to dampness.

The party then walked back to Catcune along the edge of the Gore Water.

This area is best visited in the summer as it can be very wet and marshy.

J. Robinson

Outing to the Leaderfoot area — 1st May 1982

On May-day, 26 members set off from Earlston in strong winds, intermittent sunshine and a few flakes of snow, and sought shelter through mature woodlands between White Hill and the Leader Water. Here we found many of the early-flowering woodland plants, including good drifts of wood anemones, celandine and dog's mercury, and when we came out into more open parkland at Cowdenknowes and on through typical hedgerow and roadside verge habitats to the Park, the flower list lengthened rapidly. We were pleased to see many patches of primroses, and we studied a bank of dog's mercury where the female plants were plentiful — they are commonly outnumbered heavily by the male plants, when reproduction is by means of a creeping rhizome.

Lunch in the lee of a stone dyke on the edge of Brotherstone Moor was cut short by a very heavy hailstorm, but we soon reached the shelter of a long belt of mature pine wood, and the storm was over when we took to the old drove-road leading to Covehouse — Mellerstain — Lauder. Moorland birds here included Meadow Pipit, Wheatear, Curlew and a flock of 'batchelor' Black-headed gulls. Later, when we had turned westwards for a return to Earlston by another route, we watched five roe deer on Brotherstone Moor. Three or four hares were also seen during the afternoon; we passed a 'gamekeeper's gibbet' of moles impaled on a wire fence; and one member had found a dessicated stoat corpse to add to her skull collection! Marshy ground and stream banks brought further additions to the flower list, but continuing strong winds despite the sunshine meant that few small birds were either seen or heard.

Much of our walk was over land grazed by hill sheep and their young lambs, but these co-operated by leaving the actual paths clear, and we are grateful to local farmers for permission to cross their land at this time of year.

M. Watson

Outing to Barns Ness - 8th May 1982

About twenty members met at Barns Ness on a lovely early summer day with a light breeze and sunshine. The Warden, Mr V. Lough, met us and spent the morning pointing out the various features of the area. We learned about fringe plants, such as Marram grass, which dislikes rich soil but can survive in sand. In decaying it becomes humus, thus turning the sand to soil and other grasses then take over. We were shown various fossils in the rocks on the beach - fossilised worm casts, Brachiopods (marine shelled animals popularly known as 'lamp-shells'), fernlike fronds which were tentacles of an animal, a colonial coral reef 250,000,000 years old. There were coal seams in the coral reef and this was interesting as coral is formed under water and coal above. The coal could only have been formed when the rocks had been pushed up above sea level and subsequently subsided. We saw a Raised Beach in which were shells 10,000 years old. We noted that there were no trees in the area - only gorse, which is a pioneer plant and can withstand wind. The gorse helps to hold the soil together, and traps seeds of other plants which help to provide winter food for birds and mammals. The morning concluded with a slide show in the Warden's office in which we were shown some lovely pictures of birds, mammals, butterflies and plants.

In the afternoon, we walked towards the Power Station. Here we saw a number of Turnstone in summer plumage, and one Purple Sandpiper, and of great interest - a pair of White Wagtail (subspecies of Pied Wagtail).

M. Woods

Galloway Weekend - 15th-17th May (Centred at Newton Stewart)

Reading about beautiful Bargaly Glen in Andrew McCormick's "Galloway", was the inspiration for a May weekend in that area.

On the Saturday morning, our party met at Caldons Camp Site Day Visitor Car Park in Glen Trool. Accompanied by Forestry Commission Ranger Jeff Shaw and Dr G. Fry of the Nature Conservancy Council, Dalbeattie, we spent a very enjoyable forenoon in Caldons Woods identifying the varied flora of this delightful native Sessile Oak woodland by Loch Trool. Its ground flora included Wood Anemone (*Anemone nemorosa*), Primrose (*Primula vulgaris*), Marsh Violet (*Viola palustris*), Sheep's Sorrel (*Rumex acetosella*), and Lady-fern (*Athyrium filix-femina*). Among the birds observed within the wood were Tree Pipit, Great Tit, Pied Flycatcher (male and female), Wood Warbler and Siskin.

After lunch we left Glen Trool by a secondary road, passing forests of larch and spruce and green pasture land to the Wood of Cree. This most attractive route continues through the Wood and runs along the east bank of the River Cree to Minnigaff. The Wood of Cree is designated Site of Special Scientific Interest by the Nature Conservancy Council who are consulted in

regard to management. Dr Fry led us to the area of the oak woods which had been enclosed by high fencing. He explained that a study is being made over a period of years of the growth and natural re-generation of trees and plants left undisturbed by fauna and man. Fallen trees and branches remain to provide excellent habitats for a variety of insects. Descending from the wood of sessile oak and birch we walked along the roadway, stopping to enjoy and identify the numerous flowers on the verges skirting the woods. Yellow Pimpernel (*Lysimachia nemorum*) was here in profusion, also Woodruff (*Galium odoratum*), Water Avens (*Geum rivale*), Heath Woodrush (*Luzula multiflora*), Great Woodrush (*Luzula sylvatica*) and Green-ribbed Sedge (*Carex binervis*).

On Sunday we completed a seven-mile circular walk through Bargaly Glen. We met at Kirroughtree Forest Park Nursery, Car Park, Daltamie. There is a Visitor Centre here, illustrating the trees, herbaceous plants, birds and other wildlife of the area and booklets detailing forest walks. From Craignine Farmhouse we started off through pleasant parkland. Continuing to an attractive old stone bridge and crossing the Palnure Burn, we followed its course through changing scenery throughout the Glen. The slopes on our right were planted with young sitka spruce trees while on our left, cattle were grazing in pastures on the eastern side of the burn. We stopped for a picnic lunch and heard a cuckoo calling from trees on the opposite bank. Fine views of the granite hills of Cairnsmore of Fleet and Craignelder could be seen as we approached Corwar Farm. We re-crossed the Palnure Burn at this point returning by the west bank through mature forest past stacks of logs where felling was taking place.

A memorable sight in Kirroughtree Forest Park was a spring-green birch-wood, completely carpeted with blue wild hyacinths, as was the natural adornment of an old oak stump, with a selection of mosses, ferns, wood sorrel, miniature rosy oak apples and seedlings of birch and rowan.

On Monday morning, we met Wildlife Forester J. Livingston at Murray's Monument and he accompanied us to the Wild Goat Park and Red Deer Enclosure. We then visited the interesting Galloway Deer Museum on the shore of Clatteringshaws Loch. One of the features illustrated was the life cycle of Red, Roe and Fallow deer. The beautiful "Galloway Window", in stained glass, depicts the birds, mammals and plants of Galloway. We were fortunate to see a Crossbill on a Scots pine near the museum and it sat there long enough for us to have a good look at it.

We drove out through Forestry roads into the hills in the afternoon to see the Silver Flowe, a raised bog and an S.S.S.I. Mr Theaker of the Nature Conservancy Council led our party over duck-boards across the bog, stopping en route to explain the growth, activity and gradual changing of the bog through a hummock and mire succession. We examined the hummocks with their various mosses, and flowering plants, chiefly heather. In other parts, decomposed by the eroding effects of wind and rain, pools of water had formed. In some of these miry pools we found Bog Bean (*Menyanthes tripartita*) growing. While sheep avoid the area, deer are able to find a safe route across the Flowe to woods and hills on the other side.

On our return journey to Clatteringshaws, we stopped to watch a pair of Hen Harrier and also saw a Short-eared Owl.

Our Party greatly appreciated the help given to us by the Forestry Commission and Nature Conservancy Council, in providing excellent leaders who made our visit to "Bonny Galloway" a most enjoyable experience.

E. O'Donnell
A. McCafferty

Circuit from Buteland Farm - 22nd May 1982

Our route on the first leg of the journey took us parallel to the Water of Leith and the A71 main road. To the north Dalmahoy and Kaimes Hills were prominent, the latter being steadily diminished by quarrying. The Iron Age settlement, with Cup and Ring markings will eventually be lost. Beyond the ruins of Buteland Hill farm we were able to look down upon Leithhead Farm, where the farthest up-river of the 70 plus mills on the Water of Leith stood. Two birds were easily seen, heard and recognised, Yellow Hammer and Willow Warbler.

In the next leg up to the Bore Stane, we went alongside a plantation of spruce and larch bordered with hawthorn. In a small roadside pool we found pond skaters (*Ceris* sp.), tadpoles and water boatmen. Magpies (2) were seen at 800 feet. When we came on to the grassland we found Lapwing, Curlew and three Golden Plover. Beyond Listonshiels we moved on to the moor. Here two Mountain (Blue) Hares were seen. Red Grouse were not seen, only heard. Eventually, we reached the Bore Stane near the summit of the pass. Here was a dead fox.

From this part of the walk we had good views of Carnethy Hill and its Neolithic Cairn, the Cauldstane Slap — with its drove road — the Maiden's Cleugh of Rullion Green memory and the Black Hill, considered by some geologists to be a lacolith (see page 11 of 'A Guide to Edinburgh's Countryside').

Names in the neighbourhood, Temple House and Listonshiels have links with the Templars and religious establishments.

Though flowers, trees and birds were noted and identified, nothing of great interest was recorded.

C.P. Rawcliffe

Visit to Warriston Cemetery - 2nd June 1982

Miss Gillian Coleman of the Environmental Resource Centre (E.R.C.) led the excursion; present was Mr George Walker, City of Edinburgh District Ecologist. It was explained to us that Warriston Cemetery, plus six others in Edinburgh had been acquired by a London-based property firm who planned to 'develop' the sites by building warehouse and factory units. Planning permission had not been granted.

The District Ecologist hoped money might eventually be found to rehabilitate the site and make it useful as a place of public recreation. There were some very interesting trees and these were worth preserving. A great deal of effort would be needed to eradicate the Giant Hogweed (*Heracleum mantegazzianum*) which was widespread and well-established.

This is a most interesting Trail and should be visited by all members interested in trees: had we more knowledge of this patch of Urban Conservation we might, as a Society, be prepared to do more in support of its retention.

C.P. Rawcliffe

Outing to Chatelherault and the Avon Gorge - 12th June 1982

On Saturday, 12th June, a party of Edinburgh Natural History Society members along with some members of the Hamilton Natural History Society met at Chatelherault to be taken round the Country Park by the Estates Manager, Mr Jim Brockie and the Warden, Mr Jonathan Warren.

Before we set off the warden gave us a talk about the Park. He explained that after the death of the 14th Duke of Hamilton, 370 acres (2½ miles in length) were put up for sale — land with the Avon Gorge running through it. This land was bought by the Treasury in lieu of death duties, through the Scottish Development Department. The area is currently being developed as a Country Park by the Hamilton District Council, Department of Leisure and Recreation, with the Manpower Services Commission's Community Enterprise Programme Work Scheme.

Over the past three-and-a-half years work has been done on improving the woodlands, laying down and improving paths, etc. In addition, Chatelherault Hunting Lodge — a Georgian building — is being restored as a centre for the Country Park which is to be opened in 1988. This Lodge which was built of local sandstone in 1732 was designed by William Adam. Then the sandstone was quarried close to the River Avon but now any building stone needed is taken out of a quarry much closer to the Lodge and without blasting to save undue shattering. Any stone which is of poor quality for building — with ironstone present — is not wasted as it is used for other work on the estate, such as drystone dyking.

The warden then took us for an interesting walk on the estate. First, we passed an unusual building which had been erected to house captive wild leopards. We continued through the woods until we looked over the gorge to the ruin of Cadzow Castle. Here, the woodland is almost primary woodland with deciduous trees, Oak, Ash, Elm and added Beech, Norway Maple and Sycamore.

We went as far as the Dukes Bridge. In places the ground was carpeted with Wood Sorrel (*Oxalis acetosella*), Bluebell (*Endymion non-scriptus*), showing signs that this was ancient woodland. The top of the gorge is acid which leaches down into the valley. Not surprisingly, the Greater Woodrush (*Luzula sylvatica*) grows very well in the area.

We looked down from the top of the gorge to the site of the last mining village. In 1947 the mine ceased to be worked and the cottages of 'Hoolet Row' were bulldozed to make way for trees which were then planted on a commercial basis. Here, in addition to trees noted earlier, we also saw Holm Oak and Wellingtonia.

We clambered down the heights to the valley floor and followed the path where the mineral railway used to run. We were taken to look at a badger set and saw signs of recent activity at the entrance. We also kept a look out for signs of deer as there are about 20 roe deer in the Park.

After lunch our guides took us a walk by the Daurling Ride. This is a ride of about two-and-a-half miles with 15 bridges — the ladies would join the ride at any one of them. We were shown the site of an Iron Age Fort and nearby we saw some of the ancient oaks of the Cadzow Forest, reckoned to be as much as 900 years old. We were also taken to see a small section of what was the Medieval Park Pale, an erection meant to keep wild animals within hunting grounds. We looked at yet another quarry; this one had been used for the building of the nearby house, Barncluith. Here stones had been dressed in situ and we could see some dressed stones still at the quarry face.

We felt very privileged at being able to see the early stages of the growth of this Countryside Park and at having such an interesting guided excursion in such wonderful surroundings. We look forward to another private visit before the park is opened completely to the public in 1988.

B. Gordon

Evening outing to Blackford Hill and Hermitage - 16th June 1982

On this outing a pair of Long-tailed Tits were seen on the Hill. Swallows and Swifts were busy hawking flies above the Pond. Other birds seen included a pair of Coots with three young about two weeks old, eleven Tufted Duck, Redpolls, Willow Warblers and Goldfinch.

A Green Woodpecker was heard in the Hermitage and at the east end a Sparrow Hawk appeared, and flew off in the direction of the Braid Hills.

G. Carse

Outing to John Muir Country Park - 19th June 1982

Mr A. Clunas and Dr I. Strachan led 17 members on a most interesting walk round the Country Park.

A few steps from the car park, several pupae of the 6-spot Burnet moth, fixed to grass stems, were seen and one caterpillar was found in the process of fixing itself to the grass.

The fact that the White Campion (*Silene alba*) has the male and female flowers on different plants and Bladder Campion (*Silene vulgaris*) has the male and female parts within the one flower head, was explained. Scattered amongst the Lyme Grass (*Elymus arenarius*) which is very tolerant of salt, were Scurvy-grass (*Cochlearia officinalis*) and Spear-leaved Orache (*Atriplex hastata*). Here, too, Hoary Cress (*Cardaria draba*) grows, an introduced species and now common. It is said that it was brought ashore in the bedding of the soldiers returning from the Napoleonic Wars.

On the salt marsh which has formed only in the last 70-80 years, Red Blysmus (*Blysmus rufus*) is spreading rapidly and patches of Sea Milkwort (*Glaux maritima*), another typical salt marsh plant, flourishes. In this area Sea Sandwort (*Honkenya peploides*), which is more typical of the sand dunes, grows.

Between the salt marsh and the sea, embryo dunes are forming, and walking down to the sand we passed Sea Rocket (*Cakile maritima*), Frosted Orache (*Atriplex laciniata*), Prickly Saltwort (*Salsola kali*), Yellow Rattle (*Rhinanthus minor*), a semi-parasite, Bitter Stonecrop (*Sedum acre*) and Scotch Lovage (*Ligusticum scoticum*) which is at the limit of its southern distribution.

Walking along the tide line we picked up a sea-urchin, heart-urchin, a lumpsucker and shore crabs, and the biology of these animals was explained to us. Around the Sea Buckthorn (*Hippophae rhamnoides*) grows the tall red-flowered Hounds-tongue (*Cynoglossum officinale*).

Along the shore on a wetter salt marsh there is a carpet of Glasswort (*Salicornia europaea*), Sea-blite (*Suaeda maritima*) with its small reddish fleshy leaves and Common Salt Marsh Grass (*Puccinellia maritima*). The Glasswort favours the holes left by hooves, probably because this is wetter.

At the Hedderwick burn outlet grow patches of Sea Wormwood (*Artemisia maritima*) with its strong scented leaves. This plant is at the limit of its northern distribution. Some Borage (*Borago officinalis*) and Sand Sedge (*Carex arenaria*), a good coloniser of sand, were seen.

Walking along the path through bracken we found Figwort (*Scrophularia nodosa*), Heath Bedstraw (*Galium saxatile*), Lady's Bedstraw (*Galium verum*), Bittersweet (*Solanum dulcamara*), Honeysuckle (*Lonicera periclymenum*) and Milkvetch (*Astragalus danicus*). We went just over the boundary of the Country Park to look at Stag's Horn Clubmoss (*Lycopodium clavatum*) growing amongst the heather. We went back to the pine wood where two Maritime Pines (*Pinus pinaster*) were pointed out to us. Viper's Bugloss (*Echium vulgare*) grows along the edge of the wood.

Time was taken to observe a Yellow Hammer, Sky Lark, Swallows, Ringed Plover, Dunlin, Shelduck, Lapwings, Oyster Catchers and Eider. Looking out to sea, Cormorants, Shags, Gannets, Blackheaded Gulls, Herring Gulls and terns, Little, Arctic, Common and Sandwich were spotted.

E. Gillespie

Visit to Polton Glen - 23rd June 1982

A dozen stalwarts of the Edinburgh Natural History Society gathered in Loanhead car park at 6.30 pm with the intention of visiting the site of the Polton landslide and then continuing the excursion by walking along the river-side track to Roslin village. The party set out towards Polton down the steep slope of the narrow road that leads towards the junction of the Bilston Burn and the River Esk. In springtime the woods alongside this road are a carpet of wild garlic and the smell of it fills the air. On this summer evening, however, the party were quick to notice that it was the trees themselves that were an outstanding feature and that, sadly, because many were showing signs of attack by Dutch Elm Disease. Crossing the Esk Bridge we turned upstream and walked through the old Springfield Mill to look at the debris cast down by the massive landslide of December 1979. The bolder spirits among us decided to climb up the face of the landslide to see at close quarters the way in which the ground has been deformed and trees torn apart by the force exerted by thousands of tons of descending sand and gravel. Sharp

eyes soon spotted stones among the debris which are of a similar type to rocks occurring in the Pentland Hills and suggest that at least some of the great beds of sand and gravel in the area were derived from the Pentlands.

At the top of the Hewan Bank we met up with the rest of the party and moved on along the track to the ancient earthworks of the Maiden Castle which lie in the great sweeping bend of the Esk just south of Polton. Down by the riverside in this area we saw the first of many fine introduced trees which enrich the range available to the enthusiast. By the river is a small stand of the Weymouth Pine (*Pinus strobus*) and also several of the more commonly planted North American conifers. Moving on upstream we began to see more and more of the geological nature of the gorge of the Esk exposed in the steep cliffs. The rock is a pebbly sandstone, the Roslin Sandstone, which is thought to be equivalent to the English Millstone Grit formation in age. Although predominantly a red gritty sandstone, the rock does vary in places and occasional beds of fine sandstone and shale can be seen. Evidence for the sedimentary nature of the sandstone can be seen in the exposed sections of cliff which show current bedding.

Following the path upstream, we had arguments about the Natural History merits of felling trees and the relative values, in wildlife terms, of Oak and Beech. This did not prevent us from finding Cow-Wheat and the nesting holes of Great Spotted Woodpeckers or from finding a fine specimen of Hornbeam.

At last we were on top of the cliff opposite Hawthornden Castle looking down at the old caves beneath the castle foundations and listening to raucous cries of Jackdaws which nest in great numbers on the rugged cliffs below. Moving on past Hawthornden we paused to listen to a Wood Warbler and examine a fine stand of the grass Wood Mellick growing conveniently near the path.

Even though it was so close to mid-summer eve, yet it had been a dull night and now an early dusk was closing in on us, so we hurried on past Wallace's Cave and up the path to Rosebank House. There was one last detour to look at a fine stand of that South American invader *Gunnera* and then we came up past Rosslyn Chapel to Roslin village and a parting of the ways. Those with the sorest feet or furthest to go got a bus back to Edinburgh while the rest of us headed back to Loanhead. We walked back along the track of the old Edinburgh, Loanhead and Roslin railway and over the famous viaduct built to carry the line across the gorge of the Bilston Burn.

A pleasant but rather hurried evening in which we saw some of the beauties of the area, but perhaps if we had taken a full day we might have seen Roe Deer and Mink, crossed the river to look at some rare introduced plants, or even looked at ferns and mosses. Perhaps on another summer day the intrepid E.N.H.S. explorers will gather in wellies and old clothes and traverse the bottom of the gorge from Roslin to Polton. I look forward to it.

W. Baird

Outing to the Selkirk and Ettrick area - 26th June 1982

The weather was so unpromising that I was surprised that anyone ventured forth, but we were all prepared for the rain and the outing was enjoyable. We did not continue after 3 pm.

We first explored the rocky cliff on the north side of Kirkhope Linn below the old manse at Ettrickbridge End. This yielded Lesser Meadow-rue (*Thalictrum minus*) and Climbing Corydalis (*Corydalis claviculata*). The long, dry spell and heat earlier had dried up this area, and the only other plant in flower was Goldenrod (*Solidago virgaurea*).

Spotted Flycatchers were busy flying frequently across the river, and other birds seen were what one might expect — Grey Wagtail, Common Sand-piper and Dipper.

Passing along the riverside wood on the south side, Wood Sanicle (*Sanicula europaea*) was luxuriant, with Woodruff (*Galium odoratum*), Wood Avens (*Geum urbanum*) and Water Avens (*Geum rivale*) and the hybrid (*Geum x intermedium*), and a member of the party identified Beech Fern (*Phegopteris connectilis*). Dryad's Saddle Fungus (*Polyporus squamosus*) was noted.

The rocks by the river were searched for Wilson's Filmy Fern (*Hymenophyllum wilsonii*) which I have seen here previously, but it could not be found. Our movements were somewhat restricted by the raging torrent below, which was spectacular. Northern Bedstraw (*Galium boreale*) grew near the water's edge.

Despite the rain some Chimney Sweeper (*Odezia atrata*) moths were flying over grassland, and a Large Yellow Underwing (*Noctua pronuba*) and a Common White Wave (*Delinia pursaria*) were captured. Caddis fly and Lacewing fly were examined.

A. Smith

Outing to Ballinluig shingle beds - 3rd July 1982

There was a very large turnout of members for this meeting, and our members were further increased by six representatives of the Perth Society for Natural Sciences led by Rhoda Fothergill. Although rain fell as we left the coach, it soon stopped and the day was enjoyed in cloudy but pleasantly warm conditions.

There are many shingle beds along the rivers Tummel and Tay, but at Ballinluig, where the two rivers join, there is a particularly rich flora. Although the site is far inland, an unusual feature is that some plants grow there which are normally only found in maritime conditions. It has been postulated that in the long process of evolution, such plants developed high in the mountains, their seeds being carried down the river beds when the ice cap melted many thousands of years ago.

Undoubtedly, the most attractive plant occurring in several places on the grassier parts of the shingle, is the Maiden Pink (*Dianthus deltoides*) but there were many others of interest including Sea Campion (*Silene maritima*)

Golden-rod (*Solidago virgaurea*), Monkeyflower (*Mimulus guttatus*), Kidney Vetch (*Anthyllis vulneraria*), Shepherd's Cress (*Teesdalia nudicaulis*) and the native Barberry (*Berberis vulgaris*). In the damp and sparsely wooded area at the southern end of the shingle bed we found Common Skullcap (*Scutellaria galericulata*) and the introduced Pick-a-back-plant (*Tolmiea menziesii*).

After scanning the whole area, some members walked up the road to Logierait to see Motherwort (*Leonurus cardiaca*) — a very rare plant long known from a hedge bank there — which was, no doubt, an outcast from some village midwife's garden in days long past, when it was a popular tranquiliser.

Butterflies, identified by an expert in the matter, consisted of 15 male and one female Common Blue (*Polyommatus icarus*), two Small Tortoiseshell (*Aglais urticae*) with a batch of caterpillars appropriately reposing on a stinging nettle, and two Small Heath (*Coenonympha pamphilus*).

Birds were in rather short supply but two members saw a Goosander on the river and a number of Oystercatcher, predictably agitated by so many visitors, spent the day protesting loudly.

R. Begg

Visit to Musselburgh lagoons - 7th July 1982

Ash from Cockenzie Power Station is now being pumped into the fourth and last lagoon at Musselburgh. The old sea wall is just visible; it provided a favourite roosting place for Duck and Cormorant and they will miss it when it is submerged.

It is surprising how many interesting plants and birds can be seen in such an unpromising environment; it is always interesting to note the first colonisers. We identified Dyer's Rocket or Weld (*Reseda luteola*) well-established in the recently levelled margins of the third lagoon which has now been given a covering of topsoil. While the party was there we saw grass seeding in progress.

The Goose Green corner of the lagoon has grassy slopes on which grow Bladder Campion (*Silene vulgaris*), Gowan or Daisy (*Bellis perennis*), Hare's-foot Clover (*Trifolium arvense*) and Common Mallow (*Malva sylvestris*). Several bushes of a willow species and sycamore are established here and further along the slope grows the Giant Hogweed.

Bird watching was rather frustrating as it was high tide and we were looking into the sun, but flocks began to move in and we saw Bar-tailed Godwit, Curlew, Golden Plover and Oystercatcher coming to feed on Fisherrow Sands. Over the sea wall we saw Common Sandpiper and Redshank while Ringed Plover and Dunlin were feeding on the ashy surface of the lagoon. Flocks of Black-headed and Herring Gull and Oystercatcher were using the third lagoon as a roost. We wondered how long the habit would continue.

Finally, we were amused by the antics of a very aggressive male Shelduck repeatedly attacking a female Eider who sensibly dived and swam under water to surface elsewhere, only to be attacked again. This was

repeated several times, while the female Shelduck continued to watch her brood of three some distance away.

M. Robertson

Outing to Dalgety Bay - 10th July 1982

The surprise find on the Dalgety Bay walk was *Atropa bella-donna*. I have not found it anywhere else on my travels around these parts of Fife.

Recorded 200 years ago by Sibbald from Inchcolm, who called it *Solanum victum bella-donna* — and again from there in 1810 — it is one of the most poisonous plants that grow wild in our country. The Death Herb, Daft Berries, Devil's Berries, Deadly Nightshade — its present English name — Banewort, are some of the names it is called. In some parts of England it is Dwale, the name Chaucer knew it by.

When Duncan I was King of Scotland and Macbeth his General, the Scots poisoned a whole army of invading Danes, by placing its berries in the wine supplied during a truce.

Grazing animals leave it severely alone, but rabbits seem to eat it with impunity and a small beetle, *Baltica atropae*, lives almost entirely on its leaves. It was used extensively to supply doctors and chemists with bella-donna for plasters, ointments and tinctures. It used to be cultivated for these purposes in Suffolk.

The name *Belladonna* — beautiful lady — refers to the Italian ladies' practice of using it as a cosmetic to increase the apparent size of their eyes and hence to enhance their beauty. What a plant!

J. Carlyle

References

Corke and Nuttall. Wild Flowers as They Grow.
Young, W. Flowering Plants and Ferns. Fife and Kinross (VC 85).

Visit to Keltney burn, Perthshire - 17th July 1982

Members of the E.N.H.S. spent a very enjoyable day at Keltneyburn Reserve, a grade one S.S.S.I. under S.W.T. management. We were received by Dr Rosalind Smith, who in the winter had lectured to us on 'The Nature Conservancy in Perthshire' and by Miss Rhoda Fothergill, Convener of the Reserve Management Committee. They thoughtfully provided us with a list of the more interesting plants on the Reserve.

This is an unique site of unimproved grassland, i.e. untouched by chemicals or artificial fertilisers. There are three main habitats: orchid rich grassland, marshes and wet flushes and dry knolls on the hillside; so there is a very wide range of flora including many rare plants.

Dr Smith explained the two main problems of management: firstly, the spread of bracken and, secondly, trees regenerating, though grazing might

be a possible solution to the latter. At present the upper part of the hill has been cleared by slashing, the work done by volunteers and local school-children. (How wise to involve the young!)

Our party was then guided through the reserve, Indian fashion, to avoid trampling. The aromatic Spignel (*Meum athamanticum*) was first pointed out to us and then the orchids, the Common Spotted (*Dactylorhiza fuchsii*), the Fragrant (*Gymnadenia conopsea*), the Northern Marsh (*Dactylorhiza purpurella*), and then the rare and lovely Greater Butterfly (*Platanthera chlorantha*). A little further on were good specimens of Field Gentian (*Gentianella campestris*). We also noticed the Northern Bedstraw (*Galium boreale*) and Heath Milkwort (*Polygala serpyllifolia*).

Moving to the marshy areas through shoulder high Hogweed (*Heracleum sphondylium*) and the problem bracken we saw Marsh Marigold (*Caltha palustris*) and the Globeflower (*Trollius europaea*), the Greater Bird's-foot-trefoil (*Lotus uliginosus*) and the white Marsh Bedstraw (*Galium palustre*), and Burnet Saxifrage (*Pimpinella saxifraga*) looking like Pignut. There was also the Marsh Speedwell (*Veronica scutellata*) with its delicate white flowers.

We continued by walking up the hill. The site of the old curling pond was a surprise: now it is a mass of Bladder Sedge (*Carex vesicaria*) and Bottle Sedge (*Carex rostrata*), Common Spike-rush (*Eleocharis palustris*), Marsh Horsetail (*Equisetum palustre*), Floating Sweet-grass (*Glyceria fluitans*) and Lesser Spearwort (*Ranunculus flammula*).

Alongside the patch above the Reserve we saw Wood Cranesbill (*Geranium sylvaticum*), the rare Wood Fescue (*Festuca altissima*), the Wood Cow-wheat (*Melampyrum sylvaticum*), also rare, and the curious-leaved Zig-zag Clover (*Trifolium medium*).

There was much more of interest and in the time available we could only have a quick look at the flora; there is also much for the entomologist and the ornithologist and a great variety of ferns, fungi, liverworts and mosses too.

On the return journey we stopped briefly at the Hermitage, Dunkeld, where there is a woodland trail of pine and spruce and Douglas Fir and many ferns, including the Lady-fern (*Athyrium filix-femina*), the Male-fern (*Dryopteris filix-mas*), the Mountain or Lemon-scented Fern (now *Oreopteris limbosperma*), Broad Buckler-fern (now *Dryopteris austriaca*) and the Hard Fern (*Blechnum spicant*).

Many thanks to the organisers for such a rewarding excursion and to Dr Rosalind Smith and Miss Rhoda Fothergill who worked very hard on our behalf.

M. Robertson

Brunstane to Fisherrow - 28th July 1982

It was a beautiful sunny, warm evening when 15 members gathered at Brunstane Road South. Our walk took us round the back of Joppa via Brunstane House, along a lane to Newcraighall, crossing the village then up towards Millerhill Marshalling yard, then finally down another lane to finish by walking along a disused railway track before reaching Fisherrow.

On the road verge at the beginning of our walk, we found Field Bindweed (*Convolvulus arvensis*), White Campion (*Silene alba*), Creeping Thistle (*Cirsium arvense*), Mugwort (*Artemisia vulgaris*), Feverfew (*Tanacetum parthenium*), Lesser Burdock (*Arctium minus*), Oxford Ragwort (*Senecio squalidus*) and some Field Scabious (*Knautia arvensis*).

Further on, looking over the bridge which crosses Brunstane Burn we noticed some fine specimens of Himalayan Balsam (*Impatiens glandulifera*). Round by the farmyard at Brunstane House we saw Ivy-leaved Toadflax (*Cymbalaria muralis*), Ragwort (*Senecio jacobaea*) and Pineappleweed (*Matricaria matricarioides*) and at the field edge further up the lane there was Common Hemp-nettle (*Galeopsis tetrahit*). Round by the back of the renovated Newcraighall Cottages we could see some healthy looking Weld (*Reseda luteola*) and when we reached the road we noticed a single plant of Great Mullein (*Verbascum thapsus*).

It was such a pleasure to look over the low hawthorn hedge to see, on the right of us, a field of ripe wheat looking burnished in the sunshine; to the left of us, a barley field, pale and ripe, ready for cutting and then in the distance a hayfield already cut. We turned down the next lane and here we found the harvest had begun and the combine harvester was busy at work. Giant Hogweed (*Heracleum mantegazzianum*) looked down on us, making us feel quite dwarfed.

On our last lap of the walk — the old railway track — we noted three species of Willowherb, Marsh (*Epilobium palustre*), Rosebay (*E. angustifolium*), and Great (*E. hirsutum*); Great Bindweed (*Calystegia silvatica*), Common Toadflax (*Linaria vulgaris*), Common Mallow (*Malva sylvestris*) and Knotgrass (*Polygonum aviculare*).

The track finished at Fisherrow — the end of our evening walk.

B. Gordon

Yetholm circular walk - 31st July 1982

Some interesting plants were found by the Bowmont Water. They included:

Parsley Water-dropwort	-	<i>Oenanthe lachenalii</i>
Purple Loosestrife	-	<i>Lythrum salicaria</i>
Unbranched Bur-reed	-	<i>Sparganium emersum</i>

J. Baston

Outing to Lauder Common - 7th August 1982

The area of Lauder Common includes part of the valley of the Lauder Burn, which flows eastward from the hills to join the Leader Water near Lauder. The burn meanders through flat alluvial land — land made up of soil deposited by water — forming a haugh or flat valley floor. Steep sides of alluvial terracing, especially to the south of the burn, rise up from the edge of the haugh. The ecological attraction of the area is that within a relatively small space there is a variety of mini-habitats with a wide range of species.

About 20 members of the Society formed the party. We first examined the water-logged miry backwaters and side channels separated by rough acid-neutral grassland — short as a result of grazing — within the curves traced out by the burn. In this poorly drained wet soil grew plants which can tolerate or like a high mineral content in the soil, including Marsh Cinquefoil (*Potentilla palustris*), Marsh Marigold (*Caltha palustris*), and Marsh Thistle (*Cirsium palustre*). We saw that miry land merged into the swamp and water zones at the edge of the burn, where flowered, for example, Lesser Spearwort (*Ranunculus flammula*), Brooklime (*Veronica beccabunga*), Blood-drop-emlets (*Mimulus luteus*), Water Forget-me-not (*Myosotis scorpioides*) and in the open water several species of Water Crowfoot, including *Ranunculus circinatus*.

Where the valley narrowed, little grazing had taken place and scrub had invaded almost to the burn side. Species of Willow, Crack (*Salix fragilis*), Goat (*S. caprea*), Grey (*S. cinerea*) and Osier (*S. viminalis*) were much in evidence.

We followed a path on the south side of the burn upwards from burn level. The steep slope bordering the path on the side away from the burn was well-drained and covered with Bent-fescue acid grassland with acid loving plants such as Tormentil (*Potentilla erecta*), Heath Bedstraw (*Galium saxatile*), Whin or Gorse (*Ulex europaeus*) and Bracken (*Pteridium aquilinum*) well-represented. Whin was dense in places. The path led to the Heriotside Quarry surrounded by steep scree slopes. On these grew clumps of Male Fern (*Dryopteris filix-mas*), Scaly Male Fern (*Dryopteris pseudomas*), Wood Sage (*Teucrium scorodonia*), Foxglove (*Digitalis purpurea*), a few small regenerating trees of Rowan (*Sorbus aucuparia*) and a few plants of Great Mullein (*Verbascum thapsus*). Continuing westward along a lower path, a few energetic members scrambled up the edging scree to find some plants of Dwarf Male Fern (*Dryopteris oreades*, previously *D. abbreviata*), a new species to most of us.

We crossed the burn and climbed up more acid grassland, on the northern side of the valley changing our direction to curve back towards Lauder. We came upon 'improved grassland' with much Perennial Rye-grass (*Lolium perenne*) and Cock's-foot (*Dactylis glomerata*). We were able to compare it with the acid grassland seen earlier.

The last part of the circuit was along the side of a very fine hedge at the edge of a cultivated field. As we neared the built-up area the path left the field and became edged by a stone wall. Growing in the mortar in the crevices between the stones were the following ferns: Black Spleenwort (*Asplenium adiantum-nigrum*), Wall-rue (*Asplenium ruta-muraria*), Maidenhair Spleenwort (*Asplenium trichomanes*), Brittle Bladder-fern (*Cystopteris fragilis*) and Hart's-tongue Fern (*Phyllitis scolopendrium*).

It had been a good day for Lepidoptera, six species of butterflies having been noted on the circuit — Green-veined White, Large White, Small Tortoiseshell, Common Blue, Meadow Brown and Small Heath, and W. Grubb, a member, saw a Ringlet when he broke away from the party for a short while and went further up the valley (see page 31).

Throughout the walk the larger fungi seen were examined and recorded under their habitat. The list is lodged with the Records Secretary along with records of birds, insects and vascular plants.

J.K. Raeburn

Reference - Paper on Lauder Common - C.O. Badenoch

Nature Conservancy Council

Outing to Dobb's Lynn - 14th August 1982

The trip began with a scenic drive through the hills of the Southern Uplands. The first stop was at the Devil's Beef Tub — a massive glacial hollow (corrie) to the north of Moffat. The surrounding hills are of Silurian greywackes (see second paragraph) — as are most of the Southern Uplands — but at the base of the hollow younger Permo-Triassic sandstones outcrop. Mr J. Bunyan, leader of our party, explained that a hollow of approximately the same dimensions as the present one existed roughly 225 million years ago when the Permo-Triassic sandstones were laid down. At that time, however, the climate was very different; a vast desert covered most of Great Britain and large reptiles lived in and around lakes which formed in the lower lying areas; these reptiles have left footprints in the sand. These are occasionally found in the Moffat area. The Permo-Triassic rocks are mostly sandstones and conglomerates formed by rapid erosion of the surrounding hills; they have a reddish colour due to oxidation of iron in the arid climate.

After a brief stop in Moffat we continued along Moffat Water to the Grey Mare's Tail. Moffat Water meanders along a classic U-shaped valley which runs dead straight for 40 miles due to preferential erosion along the lines of a fault. On reaching the Grey Mare's Tail, lunch was eaten in a variety of sheltered spots before proceeding along the path to the base of the waterfall. The Grey Mare's Tail is a classical hanging valley, the 200 foot waterfall having good exposures of Silurian greywackes. Although the greywackes appear to be featureless, in recent years detailed studies of the mineral grains and rock fragments found in these poorly-sorted coarse-grained sandstones has enabled identification of the source region. The material was derived from the erosion of a mountainous landmass to the north, some of the material bearing a close resemblance to the Torridonian sandstones of the far north-west of Scotland.

Studies of structures within the greywackes enable interpretation of the environment in which they were laid down. The unsorted nature of the beds is indicative of rapid deposition of material carried down the continental slope to the deep sea floor in the fast flowing 'turbidity' currents. From ripple marks and other features formed at the surfaces of individual beds, the direction of the currents can be deduced. Thus the overall picture is that of a trough lying north-east — south-west with highlands to the north-west and open sea to the south. Sediment carried to the sea from the highlands was brought down the continental shelf by turbidity currents and deposited in the trough.

A short walk up the Moffat Burn from the Grey Mare's Tail brought us to Dobb's Lynn where another hanging valley has cut back into the hills, this time exposing finely bedded shales and mudstones. These shales contain large numbers of graptolites — a phyla of hemichordates which evolved rapidly through the Ordovician and Silurian periods. The sequence at Dobb's Lynn is very compact; this was recognised by Lapworth who began work at Dobb's Lynn in 1866 and was able to correlate strata there and at Girvan (where the sequence is much thicker). Every layer at Dobb's Lynn contains a slightly different group of graptolites showing their evolution from many branched forms to monograptids with single 'stipes'. The condensed sequence represents quiet deep water conditions reached by only the finest sediment; the thicker sequence at Girvan has a wider variety of fossils and sediments representing near shore conditions thus further defining the extent of the trough.

Returning to the coach, we drove on past St Mary's Loch and the Tibbieshiels Inn where Lapworth spent many 'revelous' nights with the other notable geologists of the period. Just past the inn is Cowpeel Bridge where further greywackes are exposed. The beds are vertical but fine grading within the beds allows the top and bottom to be defined; on the base of the beds are scour marks which show the current directions.

K.M. Dearing

Lammermuir circular walk - 28th August 1982

On Saturday, 28th August, 15 members counted themselves very lucky in having a beautiful bright clear day for the Lammermuir walk. We set off on to the hillside from near Carfraemill Inn following a path along the side of Addiston Farm. House Martins and two Red Admiral butterflies were seen here, as well as some Small Tortoiseshell and one Green-veined White. A two spot Ladybird was noted. The path led on to the hills where heather was in full bloom making its lovely purple haze.

Where the path runs down to Tollishill we stopped for a little while to watch a pair of Kestrel flying below us, giving us a good chance to see the difference between the male and female plumage. Then we turned east and took the path which was to lead to Soonhope Burn. On the moorland path we were delighted to see yellow Mountain Pansy (*Viola lutea*). Down by the Soonhope Burn we found growing plants typical of a wet situation, including Bog Stitchwort (*Stellaria alsine*), Brooklime (*Veronica beccabunga*), Marsh Marigold (*Caltha palustris*), Marsh Willowherb (*Epilobium palustre*), Monkey-flower (*Mimulus guttatus*), Water Forget-me-not (*Myosotis scorpioides*) and Water Mint (*Mentha aquatica*).

Later we saw a Dipper, disturbed some Red Grouse and a few Mallard, but some of the group were lucky in seeing a pair of Stoats playing on the hillside between the heather and a few rocks. At the farm where the Soonhope Burn joins the Whalplaw Burn to become Cleikimin Burn, we startled a Snipe and watched a Heron, with the heron's usual concentration, waiting patiently to gain its next meal.

B. Gordon

Visit to Gullane and Aberlady Bay - 4th September 1982

On a fine autumnal morning, 28 members walked from the beach car park at Gullane to take a look at the bird life in the Bay. Early September hopefully would bring evidence of wader passage, but before we even saw our first wader we had an early bonus with excellent views of a female Common Redstart near the rubbish dump within yards of the car park.

We lunched at Gullane Point and watched a large moulting flock of Red-breasted Merganser nearby along with the usual Eider and Common Scoter interspersed with a few Great Crested Grebe and a solitary Razorbill. Gannets, including several immature birds, flew close to the Point. Peter Gordon, the Warden at Aberlady, visited us while we were lunching and told us of the poor breeding record of the terns in the Reserve this year with an estimated 113 breeding pairs of Terns (Common and Arctic) producing five

fully fledged birds and the Little Terns also faring badly. Some very high tides during the breeding season flooded part of the colony, although Peter and his helpers were able to save some eggs by transferring them to higher ground. However, an added menace in 1982 was provided by foxes being increasingly active around the colony from dusk to dawn.

Lunch ended with a very good story from Kenneth Sanderson about a vulture — tame in name only — he encountered on a Spanish road. It expressed a liking for shoe laces and trouser bottoms and finally as its 'coup de grace' holed Kenneth's car radiator.

In the afternoon we walked along the shoreline to the now empty ternery and then along the edge of the saltings to take in the large numbers of waders — including some very tame Sanderling — feeding on the incoming tide. Sadly, too, we encountered a dead Roe Deer on the shore.

If the time of the year is right — August and early September — and the tide is right — an hour before high tide or when it starts to ebb — and the light is good too, then you cannot fail with waders at Aberlady Bay. We saw a closely knit flock comprising four species, nothing unusual, just Grey Plover, Knot, Bar-tailed Godwit and Ringed Plover, but we got within twenty yards of them and the vivid colour contrast of the Knot and Godwit, some still showing traces of red breeding plumage, and the striking black and grey silver of the Grey Plover epitomised wader watching at its very best. A memory to retain!

And we started with the bonus of a Redstart and finished with the bonus of a Black Guillemot in its winter grey a few yards off Gullane Point — a fitting end to a very good and very 'birdy' day.

C. Pountain

Pitlochry Weekend - 18th-20th September 1982

18th September - Pitlochry

Our first day at Pitlochry was overcast, warm and humid. This had encouraged a magnificent growth of fungi of every shape and colour. We set off towards Killiecrankie Pass, then round Faskally Loch. Fly agaric and Orange-peel fungi were identified, the latter covering large areas on the wet edges of the forest roads. The Chantarelle mushroom was found although no one put it to the culinary test. The names of the many other species eluded us, but their beauty of colour and variety of shape seemed designed for use as drinking cups or baths for the elves and gnomes who haunt these places in the gloaming.

Bird life was not abundant but on the loch we saw Mallard, Pochard, Tufted Duck and Little Grebes. Pied and Grey-headed Wagtail flitted along the rivers, and in the pine woods we saw Blue and Coal Tit. There was one sighting of Goldcrest.

The variety of trees around Pitlochry was of exceptional interest, particularly the conifers. We crushed the Douglas Fir needles to smell the orange scent, tested the sharpness of the Norwegian Spruce against the Sitka (much sharper and bluer), and noted that the Grand Fir had flattened

leaves with both long and short needles. Western Hemlock, another American import, resembles a redwood and has a growing tip which bends gracefully.

The Falls of Tummel are now largely drowned by the waters of Fascalloch, but we saw the old fish pass which was cut through solid rock about 1907 by the Laird of Bonskeid. The modern fish pass at the Fascalloch dam contained three salmon. It was a very pleasant outing.

K.W. Sanderson

19th September - Allean Walks in Tummel Forest

The night before, the weather forecaster had raised our hopes that on the next day there would at least be some sunny intervals and blue sky, but when we arrived at the Forestry Commission Centre at the Queen's View the prospects were not too good, with mist and drizzle. A very enthusiastic and helpful forester behind the counter marked our leader's route leaflet pointing out where we would see the various types of conifer and indicating where to see the best views. A bit optimistic as it turned out!

He took us to a small fenced compound and showed us a Noble Fir (*Abies procera*) with its smooth blistered bark and flat horizontal leaves, and explained that the Giant Fir (*Abies grandis*) looked very much the same but had leaves curled up like a toothbrush. All very confusing and discussion went on all day on the differences between Norway Spruce and Sitka Spruce. A short distance up the forest track we came to the restored clachan with its various dwellings for humans and animals. Here, one of our members was very helpful and told us something of its story. We had a somewhat wet lunch at a nearby viewpoint. Despite the low cloud and the showers, the autumn colouring on the hills across Loch Tummel was very fine and it was possible to imagine how glorious it would have been on a better day. The thickness of the walls of the restored fort were most impressive, but I think that most of the party would agree that the strongest impression of the day was the infinite variety, shape and colouring of the fungi and toadstools. So many to see and in unexpected places! Alas! nobody present could put a name to many of them. Obviously something to be remedied!

A. Fraser

20th September - Kindrogan

On the way home on Monday, we stopped at Kindrogan Field Centre. It was not a very bright day, so that the distant views from the triangulation point on the Kindrogan Hill were rather ill-defined. However, it was easier to see the features immediately below the top. The riverside area and the lower slopes consisted of deciduous woodland, the principal trees being birch, alder, willow, oak and the conifer Douglas Fir. Also, in this area were found a few dead or dying trees, covered with lichen and bracket fungi.

The remainder of the walk up to the summit and back to the Field Centre was through coniferous forest, with some deciduous trees, mainly birches lining the path on the uphill stretch. The major conifers seen were Sitka Spruce, Norway Spruce and the European larch. Across the path on the way up was a moss and lichen-covered boulder characterised by black (mica and augite) and white (quartz and feldspar) minerals. This had been carried by ice. The nearest solid outcrop of this rock is six miles away to the north-west. The leading members of the group observed three Roe deer. The low-lying

vegetation between the end of the forestry belt and the summit included Cowberry, Crowberry, Bearberry and Blaeberry. Plants noticed in particular on the way down were Heath Bedstraw, Marsh Thistle, Sneezewort, Self Heal and Bog Myrtle. A very large Scleroderma (earth-ball) fungus was spotted on the forest road on the final part of the excursion. Just before reaching the access road to the Field Centre, there was a tremendous cloud-burst, signalling the onset of really heavy rain for the rest of the day.

R. Clark

A list of birds and trees seen in the Pitlochry area, 18th-20th September is lodged with the Records Secretary. We thank the authorities for allowing our party to walk through the grounds of the Field Centre.

Outing to Gartmorn Dam - 13th November 1982

It was a cold, wintry Saturday when 13 members met at Gartmorn Dam to be taken round the reservoir by the Countryside Ranger, Mr Ian Nicol. First, he took us to what was formerly the old pump house, now the Information Centre, to show us slides of the district and also to explain the history of the dam.

We learned that Gartmorn Dam is a man made reservoir covering 160 acres. It was constructed by the Earl of Mar in 1713 to supply water to his Alloa colliery; later it was also used for wool, flour and paper mills, then, too, for domestic purposes. This reservoir is now the oldest man made reservoir in Scotland still being used as a domestic water supply.

On our walk round the Dam we saw a good variety of birds — Long-tailed Tits, Goldcrests and Fieldfare — flitting about the trees at the water's edge. On the reservoir there were Goldeneye, Coot, Swans (Mute and Whooper), Gulls (Black-headed and Common), Teal, Wigeon, Pochard, Shoveller, Mallard, Tufted Duck, Grebe (Great-crested and Little) and Heron.

We gave our thanks to Ian Nicol for giving us such an interesting day.

B. Gordon

THANKS

This Journal gives me the opportunity of thanking members for the two lovely flower pictures given to me at the November meeting in appreciation of the work which I carried out on:

"A Guide to Edinburgh's Countryside"

May I also thank the many members who helped in so many ways with the production of this book.

Thank you very much indeed.

J.K. Raeburn

EDINBURGH NATURAL HISTORY SOCIETY

LIBRARY

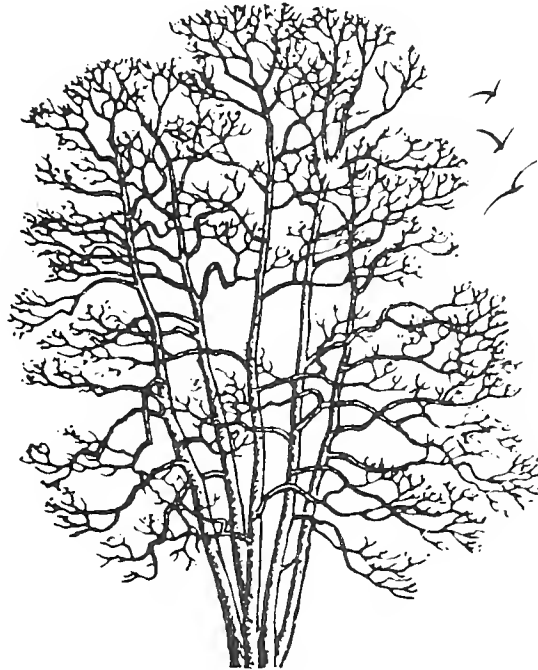
The following books have been added to the Library during the past year:

Woodland Birds	Eric Simms (donated by M. Woolgar)
Flowers of Europe	Oleg Polunin (donated by H.S.M. Elborn)
Borne on the Wind	Stephen Dalton (donated by J. Winham)
The Royal Botanic Garden, Edinburgh	Fletcher & Brown (donated by J. Winham)
The Naturalist in Britain	David Allen (donated by J. Winham)
The Biology of Lichens	Mason E. Hale (donated by J. Winham)
How to Know the Lichens	Mason G. Hale (donated by J. Winham)
Excursion Flora of the British Isles	Clapham, Tutin and Warburg (donated by J. Winham)
The Dictionary of Birds in Colour	Bruce Campbell (donated by M. Watson)
Fungi of Northern Europe (2 volumes)	Nilsson & Persson (donated by T. Prentice)
The Wild Flowers of Britain and Northern Europe	Fitter, Fitter and Blaney (donated by T. Prentice)

The books are now stored in a cupboard at the Guide Hall, in Melville Street, and are available to members at any of the indoor meetings. Any person wishing to borrow a book at any other time should contact the Librarian.

F. Howie

**THE
EDINBURGH
NATURAL HISTORY SOCIETY**



JOURNAL

1983

EDINBURGH NATURAL HISTORY SOCIETY - 1983

PRESIDENT	Mr W.D. Gill
VICE PRESIDENTS	Mrs E. Farquharson / Dr R. Begg
HONORARY SECRETARY	Mrs C. Stewart 41 Craigleith Hill Avenue, Edinburgh EH4 2JL Tel: 031-332-7524
ACTING ASSISTANT SECRETARY	Mrs E. Gillespie 11 Drylaw Crescent, Edinburgh EH4 2AU Tel: 031-332-3214
HONORARY TREASURER	Mr A. Dickson 31 Alva Place, Edinburgh EH7 5AY Tel: 031-661-1216
MINUTES SECRETARY	Mrs S. Litteljohn
COUNCIL MEMBERS	Mr P.W. Brown appointed 1981 Mr C.P. Rawcliffe 1981 Mrs J. Robinson 1981 Mr W.D. Bennett 1982 Mrs C. Campbell 1982 Mrs B. Gill 1982 Mr G. McDougall 1983 Mr A.M. Thomson 1983 Mrs M. Robertson 1983
JOURNAL COMMITTEE	The President (ex officio) Mrs E. Farquharson Miss H. Jackson Miss J.K. Raeburn - Convener Mr C.P. Rawcliffe
EXCURSION COMMITTEE	Miss M. Abel 2 Marchmont Street, Edinburgh EH9 1EJ Mrs E. Gillespie 11 Drylaw Crescent, Edinburgh EH4 2AU Miss B. Gordon 50 Argyle Crescent, Edinburgh EH15 2QD Miss A. McCafferty 1 Craighouse Road, Edinburgh EH10 5LQ Mrs J. Lyburn 4 Cumlodden Avenue, Edinburgh EH12 6DR Miss E. O'Donnell 22 Jordan Lane, Edinburgh EH10 4QZ Mrs M. Robertson 42 Gardiner Road, Edinburgh EH4 3RN
RECORDS SECRETARY	Miss M. Mowat 45 Merchiston Crescent, Edinburgh EH10 5AH
EXCURSION REPRESENTATIVE on COUNCIL	Miss B. Gordon
LIBRARIAN	Miss F. Howie 3 Wellington Street, Edinburgh EH7 5EE Tel: 031-556-6471

CONTENTS

	page
EDITORIAL	2
THE LATE Dr JAMES MILNE - PRESIDENT 1962-1965 - AN APPRECIATION	3
IAM SIME FUND	3
WINTER INDOOR MEETINGS	4
NATURE CLUB	6
ICELAND - AN EXCITING LAND OF CONTRASTS	8
TREE DISEASES IN LOTHIAN - A CONTINGENCY PLAN	11
RESERVE MANAGEMENT AND EROSION	13
SOME FUNGI FROM YELLOWCRAIG	15
DRAGONFLIES OF THE LOTHIAN	18
WATER-BUGS OF THE LOTHIAN	22
WILD FLOWER NAMES	24
NOTES ON NATURAL HISTORY	
Some 1982 Observations	27
Observations throughout 1983	28
Forth Island Bird Counts 1983	31
Observations on Lepidoptera 1983	32
Tapping the Lines?	32
EXCURSIONS 1983	33
REPORTS AND EXTRACTS FROM REPORTS	35
USE OF SOCIETY TELESCOPE	end page

EDITORIAL

The Editorial Committee would like to thank members for their articles, observations and reports of excursions, and Dr Alan Silverside, a good friend of the Society, for his article on Fungi at Yellowcraig.

An account of the way in which the Ian Sime Fund, set up in 1979, has been and will continue to be used is given on page 3. We hope that more members will apply for grants. David Jones, who was in part financed by the fund for his biological visit to Iceland, has given us a fascinating general account of the expedition. Its aim was to compare and contrast Icelandic plankton with that of Scotland. We look forward to seeing David's pictures and also hearing about some results of his investigations at a meeting in the future.

In last year's Editorial members were told of some of the ways in which the interest from the Gunn Bequest Fund had been spent up-to-date. Since then a telescope has been purchased and £2000 allocated to the Bawsinch Committee for the creation of a 'pond' on the Reserve in memory of Mr Gunn. The telescope is being looked after by Charles Rawcliffe and details for borrowing it are given on end page. (There is a photograph of Charles using it opposite page 24). The Committee will always be pleased to receive from members further suggestions for use of the fund. It is expected that a full report of any decisions made will be given in next year's Journal.

The four winning entries to the Gunn Photographic Competition are reproduced in black and white opposite page 27. There was an encouraging response of eleven entries to this first competition and it is expected that there will be more entries next year. We would like to thank Mr. Malcolm Liddle for judging the competition.

The Society had a very pleasant evening in the Guide Hall on 2nd February when it hosted the BBC Natural History Programme, Nature Club. A report of this meeting is given on page 6.

Although it is hoped that it will never be necessary to call on members we are pleased that Dr John Sheldon, Regional Ecologist, has asked for volunteers from the Society to join a register of those people ready to help identify any Tree disease which may enter the Lothians. An account describing the contingency plan is given on page 11.

We thank Bob and Betty Smith for their thought-provoking article on 'Erosion' in the Reserves and Country Parks in the Lothians.

Earlier in the year Bill Clunie indicated that he would like to resign from being Projectionist. At the AGM Bill was thanked in a tangible way for his expert handling of light and sound for over seven years. We hope that by the time this Journal is published his successor will be known.

There are many more people to thank for keeping the Society lively and active throughout the year. They include the President and all members of the Council, especially the Secretary and Assistant Secretary, the Minutes Secretary and Records Secretary: members of the Excursion Committee who arrange and carry through so many successful excursions; the Catering

Group who provide refreshments and the Librarian who is present at meetings to give out books. We give especial thanks to Mary Clarkson, one of our members, who has audited our accounts for over ten years, but has now asked to be relieved of this duty owing to pressure of work. We also thank Gordon Finnie and his associates and Frances Anderson for all their care and interest in the production of the Journal.

During the year, Dr James Milne, a very respected and valued Past President, died peacefully after a long illness. Following this Editorial there is an appreciation of his life and contribution to the E.N.H.S. written by George Bell, who knew him well.

THE LATE DR JAMES MILNE - PRESIDENT 1962 - 1965

AN APPRECIATION

After a prolonged illness, Dr James Milne, President of the Edinburgh Natural History Society from 1962 - 1965, died in June 1983. His fair-minded and practical approach to Society business at Council meetings was invaluable. At public lecture meetings his calm and friendly personality did much to put visiting lecturers at ease. However, it was as an amateur botanist that Dr Milne made his greatest contribution to the Society. Born in the county of Forfar in 1893, James Milne attended a small parish school run by an aged schoolmaster who taught the 'Three Rs' indifferently but field botany with inspiration! It was during these boyhood excursions that James Milne's botanical enthusiasm was kindled. In later years while studying medicine at Edinburgh University, Materia Medica classes added another dimension to his botanical knowledge. Dr Milne's love for botany continued throughout his working life even though a GP's routine left little time for leisure interests. It was not until his retirement that he found sufficient time to devote to his botanical studies. A field trip with Dr Milne was usually a memorable experience, for his excursions had the timeless element of a bygone period. Wild flowers were identified and studied in a leisurely way, usually aided by Clapham Tutin and Warburg's 'British Flora' or occasionally with an older flora such as Rev John's 'Flowers of the Field'. Although in later years, age and infirmity compelled Dr Milne to take a less active part in Society affairs, his interest in natural history and especially botany never left him.

G. Bell _{jc}

IAN SIME FUND

On the death of Ian Sime in 1976 the Society lost a much valued colleague and friend, and his final act of generosity was a gift of £1000 to be used at the Society's discretion.

Much thought was given to the most suitable ways to benefit the members in a manner which would have won Ian's approval and the consensus of opinion ultimately showed that encouragement to greater understanding through education was considered by many to be one way of so doing.

A start was made in 1979 when 3 secondhand microscopes were acquired through the kindness of Professor Whitby. These microscopes have been in almost continuous use since their purchase. A year later a stereo-magnifier was bought, and a second one added in 1981.

Through the good handling of the Fund by the Treasurers the capital sum has not been broached and sufficient interest accumulated to allow expansion in the scope of the Fund.

Sponsoring of members on field courses was then started. In 1981 one attended Preston Montford (Birds and Mammals in the Hand), and two were at courses at Kindrogan in 1982 (Field Ecology and Autumn Bryophytes). In 1983 one member went to a botanical course run in the Welsh National Park and another member was partially funded for a research project.

Applications for grants from younger members and students have so far been low but it is hoped that over the next few years more will consider applying. Applications from senior members are also most welcome and only when the time comes that more applications are received than the Fund can handle will preference then be given to younger members. It is felt that this emphasis on youth would have been in accordance with Ian Sime's wishes.

Members who would like to borrow a microscope or a stereo-magnifier should apply to Miss J.K. Raeburn, 37/2 Dreghorn Loan, Edinburgh 13.

Application for grants should be made to a member of the Sime Committee listed below.

President (ex officio)	- Mr W.D. Gill
Hon. Secretary (ex officio)	- Mrs C. Stewart
Hon. Treasurer (ex officio)	- Mr A. Dickson
Elected member	- Mrs E. Farquharson

WINTER INDOOR MEETINGS 1983

January: Mr Roger Lines of the Forestry Commission spoke on 'Trees of the Scottish Forests and their Native Homes'. With the use of many slides he showed the trees found in our forests today and the places from which they were originally introduced. The native species of Conifer in Scotland are limited to pine, yew and juniper so we are indebted to many countries for the variety we now have. The Norwegian Spruce came from Europe while the Sitka Spruce and Douglas fir originated on the West Coast of the U.S.A. Japan contributed Larch and Cedar and from the Mediterranean come the Corsican Pine.

February: Dr. W. Mykura, Institute of Geological Sciences, spoke on 'The Fossiliferous Rocks of Northern Scotland and the Hebrides'.

Dr. Mykura gave a comprehensive account of the rocks and fossils in the selected area. He pointed out that during the Devonian period Scotland's

position was south of the equator and the fossils formed at that time were of tropical life. During the Carboniferous Age, when the coal deposits were laid down, Scotland was still in the Tropics but gradually throughout the Permian and Triassic Ages there were movements of the earth's crust and Scotland became much more northerly. In the Jurassic Age the South Atlantic was formed and the North Atlantic spread. Algae and microscopic life settled in deep troughs and formed the basis of our oil and gas deposits. Fossils laid down in the Jurassic Age were protected by layers of hard lava and may be studied where these out-crop in places like Mull, Skye and Raasay.

March: 'Birds of Loch Leven' was the subject of the lecture by Mr Graham Burton, Warden for the R.S.P.B. at Vane Farm. He began by giving a general introduction to the starting and development of Vane Farm Reserve which is situated on the shores of Loch Leven. The land was acquired by the Nature Conservancy and the R.S.P.B. was asked to show off the wild life and arrange educational programmes. A Visitors' Centre was established with staff available to instruct the public and school parties in all branches of Natural History.

The area around Vane Farm is very rich in bird life as about 15,000 pink foot geese, many greylag as well as wigeon and other duck winter there. Fulmar are now nesting on the hills and wheatear, curlew, reed buntings and willow warblers, to mention just a few species, are found on the reserve. On St Serf's Island in the Loch, 1,000 pairs of duck breed. A lagoon and scrapes have been made between the Loch and the Centre to attract the birds and to make viewing easier.

April: Contributors to this year's 'Member's Night' were as follows:

Mrs E. Gillespie showed slides of Damselflies occurring in the Lothians and gave an interesting commentary.

Mr Tom Boyd showed slides of Ladybirds taken at Threipmuir and Tynninghame and Mrs Betty Smith gave the commentary.

Miss J. Raeburn showed slides of wildlife taken in the Wankie National Park, Zimbabwe, and also views of the Victoria Falls and Zambezi River.

Mr W.D. Gill spoke of the new crop of Oil-seed Rape which is being grown in Scotland and illustrated his talk with slides.

Mrs E. Farquharson showed a collection of mammal skulls and explained how to identify them. Also, she showed slides of members walking in Glen Affric and northern plants found near Bettyhill. She also showed and identified many fungi found on excursions.

October: Miss J. Raeburn spoke on the subject of 'British Orchids' and illustrated her talk with beautiful slides which she had collected over a number of years. She began by saying that the Orchid family is the second largest plant family in the world and explained the structure of the Orchid with reference to the Early Purple Orchid. She showed slides to illustrate its structure and the way in which pollination takes place. She went on to show many different orchids in their habitats. The different methods used by orchids to ensure pollination was pointed out, e.g. mimicking the appearance of insects, and even their scent sometimes, and drew attention to the complicated mechanical devices which exist. As well as showing examples of very rare orchids like the Lady's Slipper and the Ghost Orchids, Miss Raeburn also showed some of those which were easily found here in the Lothians.

November: Mr R.J. Mitchell, Curator, University Botanic Gardens, St Andrews, spoke on 'Plant Collecting in China'. The expedition to the Canshan Range was the result of ten years negotiations and six botanists from the U.K. were joined by twelve Chinese colleagues to collect and record plants and flowers found there. They started at an altitude of 6000 feet and explored the various habitats that existed between that and the snow-line at 13,000 feet. Eighty to eighty-five per cent of all rhododendron species are to be found in China so there was a great opportunity to study this plant. The expedition was able to establish that some plants were definitely hybrids and not different species as had been thought originally. Other plants that grew in profusion were primulas, peonies and orchids to mention just a few. Mr Mitchell illustrated his talk throughout with beautiful slides and we were able to get an overall view of the Dali and Yagbi Counties and the Bai Autonomous Precinct.

December: Dr Hugh Ford, of the University of New England, Armidale, New South Wales, gave us a very interesting and informative talk about eucalyptus woodlands in New South Wales. These woodlands have been extensively cleared and are heavily grazed by sheep and cattle. More recently, the remaining trees have suffered heavy attack by insects, especially scarab beetles. Dr Ford has been carrying out research on the role of birds in controlling insects in these woodlands. It is likely that birds originally helped to keep insect populations in check, but now, with loss of the trees, many of the birds have gone.

A programme to regenerate the woodlands, based on this and other research, will soon be under way.

The talk was illustrated with lovely descriptive slides of the birds, and some of the other animals of eucalyptus woodlands.

S. Litteljohn

NATURE CLUB

The Edinburgh Natural History Society hosted the B.B.C. natural history programme, 'Nature Club' with the recording being made in the Guide Hall on 2nd February and the programme being broadcast on 12th February with a repeat on 17th February 1983.

Questions submitted by Society members were sent to the B.B.C. and a selection was made by the programme producer, Brian Hall. The panel to answer questions comprised Elizabeth Farquharson, Michael Scott and Adam Watson under the chairmanship of James Hunter.

Anne Davidson:

"When the one-o'clock gun is fired at Edinburgh Castle lots of pigeons erupt into the air. Buildings, vehicles and even lines of washing are soiled by pigeons. Are pigeons dirty and a menace to health and should people be dissuaded from feeding them?"

Whilst the panel agreed that pigeons, along with other wild bird species, could carry disease such as psittacosis and salmonella to humans, it was felt that this risk was minimal. Concentrations of pigeons in public places such as Waverley Station were considered undesirable. Otherwise,

it was accepted that the act of feeding pigeons gave much pleasure to many people and this compensated for any nuisance value.

Duncan Gill:

"Last Winter we had six weeks of the coldest weather in living memory. Has this had any effect on wildlife?"

Some species were considered to have had their numbers decimated. Examples quoted were small mammals and deer, wading birds such as redshank and of the plants, broom and whin suffered particularly badly. It was argued that such natural catastrophes do occur from time to time and that populations rebuild fairly rapidly back to the carrying capacity of the environment. To balance the picture, some mountain plants thrived in 1982 because the cold spell of weather was followed by a mild spring and a long growing season for these species.

Margaret Abel:

"Society members have been asked to report occurrences of Giant Hogweed in the Lothians. Can the panel tell us something about this plant and why we should be so observant of it?"

This plant originated in the Caucasus and was introduced to Britain as a garden plant. It has escaped to the wild and has moved along waterways such as the Water of Leith, the Esk and the Tweed. There is a greater concentration of Giant Hogweed in the Lothians and the Borders than in other parts of Britain. The sap of this plant removes the natural protection from human skin which may not return to normal for many months. Even light exposure to sunlight can result in very severe sunburn. Children are particularly at risk as they find the plant to be an attractive play thing and get the juice on their hands and face.

Once established, Giant Hogweed produces prolific growth. Along river banks it shades out other species and leaves the soil surface more exposed to erosion in times of flood. The panel agreed that every effort should be made to contain this plant.

Janet Raeburn:

"Grey Squirrels have been seen in Princes Street Gardens and other Edinburgh parks. Are there any records of them building dreys within the City centre?"

Grey Squirrels can now be found throughout Edinburgh and the panel reported the presence of dreys in the Hermitage, Warrender, Queen Street Gardens and the Botanic Gardens as well as in Prince Street Gardens. It was agreed that Grey Squirrels give much pleasure to children and adults by their presence but that Red Squirrels would be even better. The introduction of conifers within the City was suggested as a means of attracting the red species to the City.

Barbara Gill:

"The Magpie and the Great Spotted Woodpecker are both basically black and white. Why does the Magpie always look so clean and well-groomed while the Woodpecker looks so scruffy?"

The panel suggested that the differences in appearance of these two birds were perhaps an optical illusion. The Magpie has large distinct areas of black and of white, whereas the Woodpecker's markings are more diffuse

and this enables it to use its colour in the dual role of camouflage as well as display. Living amongst city trees may make our Woodpeckers grimy whilst searching for insects or entering their nesting holes. A further difference suggested was the possible difference in feather structure between the two species which may in turn be affecting outward appearance.

Enà Gillespie:

"During the past year we have looked for signs of regeneration of Wych Elm. Although the trees produce seeds freely, there do not appear to be any seedlings or saplings. Why is this?"

The panel felt that this was a long term problem, not restricted to this past season. Elm seedlings are notoriously difficult to germinate and after being shed have only 3-4 weeks in which to find the right combination of seedbed and weather conditions. Last winter was very cold and many seeds would be consumed by birds and small mammals. One suggestion put forward was that pigs might be introduced to sterile mature woodland and that their grubbing activity could improve the chances for seedling establishment.

Other questions from Mary Robertson and Charles Pountain were used as 'warming up' and 'winding down' questions and further questions from the floor were discussed by the panel after the recording session had been completed.

W.D. Gill

ICELAND - AN EXCITING LAND OF CONTRASTS

Spending two weeks in a new country can give one no more than a superficial familiarity with the true character of the land and its people, and this result is achieved only when one is able to spend all the time digging into past history and the present way of life of its people. My two weeks in Iceland during July were spent in an attempt to find suitable lakes, pools and ponds to sample for their plankton but, because I travelled around nearly half the circumference of the island and walked many miles over roads, tracks, moorlands and lava beds, I think that I began to get some feeling for the countryside that I was exploring and particularly for the scenery and the vegetation. For reasons such as the late-developing season, some difficulty in reaching suitable areas and the distances I had to travel between areas, the collecting programme was not as successful as I had hoped it would be. In the way of such things the last site that I sampled gave me the first really successful and easily obtained samples of the trip, but unfortunately there was no way in which I could delay my return in order to start all over again. However, this did not prevent my pleasure and interest in the countryside that I was travelling through.

It will not surprise many people to learn that some parts of Iceland bear a considerable resemblance to parts of Scotland. For example, many of the moorland lakes reminded me of Scottish lochs that I know. However, even there, on a few occasions there was a difference, first borne into my consciousness as a faint sound familiar only from a gramophone record, it was the melancholy call of the Great Northern Diver (*Gavia immer*). This, to me, was one of the two most exciting sounds I heard in Iceland. Having commented on similarities I should add that there were many views of the

countryside which were not familiar. For example, views, which on this visit were sadly distant, of extensive snowfields from which glaciers descended into the valleys. There were also mountain ridges, with pinacles of dark broken rock looming over the roads and wreathed in snow even in the bright sunshine of a northern mid-July. Perhaps the discovery of that warm northern sunshine was one of the greatest surprises after we had spent more than a week in the mainly damp, cool and windy greyness of Reykjavik and Thingvallir National Park in the south-west of the country. To go to Akureyri, the capital of the north, and find mild, sunny warmth that tempted us immediately into an open-air swimming pool, despite the late evening hour, was almost unbelievable.

Akureyri could also be called the 'city of flowers' at this time of year. Not only does it boast an extensive Botanic Garden, full to bursting-point with flowers of every kind making the most of the short summer, but the local authority ensures that such profligate blooming is seen by all the towns-people and visitors because every traffic island and many roadside beds are brightened by flowers. According to one informant, two weeks prior to our visit, snow was still present down to the fjordside. No doubt, as I write, autumn will be returning and once the equinox is reached the days will shorten rapidly until a bare hour or two of daylight - on good days - is the most that can be hoped for.

Iceland is known as the 'Land of Ice and Fire', but much of it now bears a comparatively placid and pastoral face. Most impressive, at the time of my visit was the quantity of grass being cut for hay in the valleys. Everywhere the rich green grass was being mown, turned, shaken and baled rapidly to make what appeared to be top-quality hay. Obviously, conditions of warm sunshine and clear dry air were favouring the drying process and no time was being wasted in gathering in this essential harvest. In most parts this appeared to be the entire harvest. Occasional patches of potatoes seemed to be the only additional crop in the west and north, although stock, in the form of sheep and ponies, grazed everywhere from the seemingly rich meadows up to the occasionally wet, wild and poorly vegetated moorlands. In some meadows there were herds of dairy cows, appearing to be of mixed parentage, but with the undoubted capacity to produce a lot of milk. Many of the cows wore supports for their large and pendulous udders - the bovine equivalent of a 'bra' - in order, no doubt, to save unwanted strain on their relatively small frames. Near Husavik, just below the Arctic circle, there were signs of the use of one of Iceland's natural advantages, geothermal heat. Greenhouses, heated by piped natural steam, were quite common on some of the farms. This form of heating, coupled with 24 hours daylight must enable plant production to progress at a very rapid rate. Another industrial use of a natural feature was also evident in this area. Extensive wooden frames, erected on areas of land exposed to winds are used to suspend and dry fish. These are later sold to be eaten either raw or cooked.

The main impression one obtains of farming in Iceland is that it is most definitely not at subsistence level and one feels that most farmers make a good living. The farmsteads on the whole are extremely neat and well-cared for and many have relatively new, stylish, modern houses. Judged by their bright cleanliness, painting of all buildings must be carried out every year, a wise precaution I imagine in order to protect the corrugated galvanised sheet that is used almost everywhere for roofs and, in the older properties, for the walls too. However, in contrast to the

west of Scotland, one is rarely conscious of its existence because of the care that is taken to maintain it in good condition. Modern buildings, especially in the cities are built of concrete poured into wooden shuttering so that construction continues piecemeal and it is quite common to find one part of a house being lived in, completely finished inside, and the remainder still being built.

Reykjavik, the capital, is the largest town in Iceland and is undergoing very rapid development. It gives the impression of surging growth, of bursting out of its old boundaries and sprawling over the adjacent hills. Streets of small factories and shops resemble the wild west with dirt roads, no tarmac and no pavements. The most astonishing happening of my early exploration of the city boundaries was to stagger over the pock-marked wasteland of a large building site, climb over a fence and find myself in terrain that could have been the high tops of the Cairngorm mountains - with an arctic-alpine flora to match. Mountain Avens (*Dryas octopetala*), for example, was as common as the Dandelions in my garden and, from that point onwards, a botanical photographic safari began. To list all the exciting species that I saw would take far too long here, but a few of the ones I consider to be outstanding are Frog Orchid (*Coeloglossum viride*), Alpine Catchfly (*Lychnis alpina*), Alpine Gentian (*Gentiana nivalis*), Alpine Bartsia (*Bartsia alpina*), Hairy Stonecrop (*Sedum villosum*) and Woolly Willow (*Salix lanata*). Many of these will be familiar to those of you who specialise in going to out-of-the-way places to see Scottish rarities, but what might surprise you in Iceland is the occasional profusion of flowers such as the massed banks of Wild Pansy (*Viola tricolor*) beside the road, carpets of Moss Campion (*Silene acaulis*) bigger and more extensive than any I have seen in Scotland and even massed spikes of both the Frog and Northern Marsh Orchids. There is no doubt that the Icelanders are fond of their flowers because in many Reykjavik gardens they cultivate such plants as Red Campion (*Silene dioica*) and Sweet Rocket or Dame's Violet (*Hesperis matronalis*) which also occur in the wild.

Birds in the city were surprisingly rare, however, even in the parks and open areas. Apart from hearing an Oystercatcher (*Haematopus ostralegus*) and a Redshank (*Tringa totanus*) over the tent in the camp-site birds seemed to be almost non-existent, but once beyond the city boundaries the situation changed. Whimbrels (*Numenius phaeopus*) rather than Curlew (*Numenius arquata*) called monotonously, although perhaps not so monotonously as the omnipresent Golden Plovers (*Pluvialis apricaria*). Black-tailed Godwit (*Limosa limosa*) fluttered, almost static in the air, around our heads when we were encroaching on their nesting sites. Red-necked Phalaropes (*Phalaropus lobatus*), inquisitive to the point of seeming fearless, came within a few feet of me as I lay on the bank of the pool and although the only common small bird was, not surprisingly, the Meadow Pipit (*Anthus pratensis*), it was exciting to see Redwings rather than Blackbirds and Thrushes and the occasional moorland rarity such as Arctic Skuas (*Stercorarius parasiticus*). Arctic Terns (*Sterna paradisea*) seemed to have strayed far from coastal areas and were often seen over the lochs that we were sampling. Presumably they were able to feed well enough on the young trout and char in these waters. Many familiar birds do not occur in Iceland, and some days passed before it dawned on me that the rooks and crows I thought I was seeing were really Ravens (*Corvus corax*).

Power, in Iceland as in Scotland, is at least partially obtained from water. Melt-water from the mountains, not only in the spring but also from

the permanent snow- and ice-fields in the summer, is used to generate electricity in some areas, but one of the newest experiments is to generate electricity by tapping underground steam pressure. They are using this method to generate 55 MW at the Krafla power station and hope to be able to supply increasing domestic and industrial demands. The area in which this experiment is being developed is one of considerable volcanic activity, where the ground rumbles and vibrates like a huge machine and this provided me with my second most exciting sound in Iceland. Steam issues from many holes in the hillsides, sulphur is deposited in heaps beside other holes and elsewhere, pits of grey mud boil and 'bloop' unendingly.

A fascinating country, full of contrasts and, at the right time of year, a paradise of flowers, a haven for birds and a living geological museum as well. However, be warned! If, in a Scottish summer you wear two layers of clothing, take five to Iceland; if, normally, you wear three, take eight! You may well need them all.

D.H. Jones

Footnote: I acknowledge with grateful thanks that this collecting visit to Iceland was financed in part by a grant of £200 from the Ian Sime Bequest Fund of the Edinburgh Natural History Society.

TREE DISEASES IN LOTHIAN - A CONTINGENCY PLAN

In the late sixties, an aggressive form of Dutch elm disease, which quickly kills infected trees, was imported through various ports in England, from North America. The disease spread rapidly, to devastate the elm dominated landscape of England, particularly in the south. In 1976, or thereabouts, the disease was introduced to Scotland, undoubtedly through the transportation of diseased timber across the border to satisfy certain local timber markets. In Lothian, the authorities have been dealing with the consequences ever since.

This is a story which we now know all too well, but unfortunately it is not an isolated one. As recently as 1982, the discovery of the spruce bark beetle in forests in Wales and its border, emphasised again the risk of non-indigenous tree pests and diseases being introduced to threaten both our native and more exotic timber stocks. The physical isolation of Great Britain by the sea is no longer a protection factor for our tree stock from foreign pests and diseases. Today's voracious British timber market, and the relative ease of timber transport from any corner of the world to satisfy this demand, breaks down much of the natural protection that our island once had.

The Forestry Commission is responsible for preventing the entry of tree pests and diseases into the country and there are stringent statutory timber import controls to achieve this. However, even these cannot guarantee that threats carried in or on foreign timber do not get through the ports of entry. In Lothian, perhaps a recent example was the discovery of a northern European species of the elm bark beetle which could add significantly to the problems of Dutch elm disease control in Scotland. Fortunately, however, this has yet to be proved. It does, however, highlight the risk that exists in our demand and reliance on imported timber,

on the assumption that this particular beetle had been imported in timber from the Continent.

To assist in its efforts to prevent major disease or pest problems arising, the Forestry Commission has recently asked all local authorities to provide information in the form of a contingency plan, which would be put into operation should a specific tree disease or pest be identified in any locality in the country. Such a problem could arise through the importation of infected timber or perhaps through the change in behaviour of a native pest or disease which, through genetic change, might make it a more serious threat to native tree stocks than it is at present.

Lothian has been the first authority to produce such a plan. Through the co-operation of the Regional and District Councils and Livingston Development Corporation, a single plan has been prepared and this now lies with the Forestry Commission - although hopefully this is one plan which will never have to be implemented.

Nevertheless, a plan of action has been prepared which identifies the expertise and resources in Lothian that could be brought into use by the authorities. Therefore, should a non-indigenous tree pest or disease now be discovered in this region, a chain of events will be set in motion which will have the objective of eradicating the problem as rapidly as possible.

Through its powers, held under the 1967 Plant Health Act, the Commission would implement this mechanism and, if necessary, go as far as introducing new powers for the local authorities, if the particular problem being dealt with showed signs of spreading - just as was done for the control of Dutch elm disease.

Should such a threat to our native tree population arise, it will be vital to carry out rapid and extensive surveys of the area where the problem has been identified, to establish the extent of the problem and to monitor the effectiveness of control measures. Lothian's contingency plan identifies the availability of personnel and an appropriate intelligence network for such an event. Here, however, volunteers have a valuable role to play to assist in 'emergency' survey work. As a consequence, a register of volunteers in Lothian, who would be willing to assist in such an operation, if ever called upon, is being drawn up by the Regional Council.

It is very possible that volunteers will in fact never be called upon, but if, for example, a case of 'oak wilt' was identified in the region - a possibility with North American oak being imported through Leith docks for the whisky barrel industry, the register would be brought out to provide a more rapid response to the disease threat than has ever been possible before.

If called upon, volunteers would be trained and organised to cover particular localities. No great expertise is therefore being sought, merely a willingness to assist, to prevent another ecological disaster arising such as that which we are now experiencing through Dutch Elm disease in many parts of southern Scotland.

The register is continuously open for new volunteers and many members of the Edinburgh Natural History Society have already reacted to an earlier request. To place a name on the register provides no responsibility or burden on the volunteer - and you do not even have to know much about tree pests or diseases since this will be the function of pre-survey training. What is required is concern for the trees in our environment and a willingness to give up some time should this heritage ever come under a further natural threat.

If you feel that you could help in such an event, and would be willing to add your name to the register, then please contact me at:

Department of Planning, 12 St Giles Street, Edinburgh

J.C. Sheldon
Regional Ecologist

References to Dutch Elm disease in previous Journals:

Journal	1977	J.C. Sheldon	p. 7
"	1978	"	p. 7
"	1979	"	p. 26
"	1980	"	p. 25
"	1982	"	p. 20

RESERVE MANAGEMENT AND EROSION

In the John Muir Country Park, if you walk from the East Links car park west along the path skirting the planted conifers, the hardcore path ends and you plough through a small area of soft sand near Hedderwick Burn. Every week hundreds of people tramp over this sand churning it up. It is hard to imagine that this heavily used spot and the adjacent sparsely vegetated soil has any biological value. But every year for a few weeks in May the area comes to life. On a calm sunny day one can see a hundred or more *Andrena* species of bees in fast searching flight, patrolling a few niches above the ground constantly on the lookout for emerging females. These bees have overwintered below ground as larvae and pupae. The males emerge a day or two before the females which are seized immediately they appear. After fertilisation they lay their eggs in burrows in the sand and stock them with enough pollen to ensure the survival of the next generation. When the hardcore path was laid from the car park all the exposed 'eroded' sandy places alongside the trees were covered, wiping out hundreds of bees and their breeding sites. The few square yards that remain at the far ends of the paths obviously constitute a very valuable 'bit' of habitat and must be retained in the present state.

Near West Barns there is a low stone dyke, backed with soil, which was gradually disintegrating. One summer's day we found the Lothian Conservation Corps in the process of rebuilding and cementing it. Neither they nor the Warden were at fault as we had not previously mentioned that we had seen 'Solitaries' - either wasps or bees - using the space between the stones for breeding. Some repair to the dyke was urgently needed but, instead of completely recementing between all the stones, it proved possible to leave many areas untouched for the solitaries.

These two examples highlight some of the problems of managing country parks and reserves. Too often the botanical or birdy person thinks of erosion as a problem without appreciating that erosion and decay are normal, natural events and that a large number of animals and plants are entirely dependent on them. In the John Muir Country Park we look each year for solitary wasps in a large hollow tree trunk lying just above the winter tide line. One gate-post with beetle holes is regularly used. 'Tidying up' in such a reserve is beset with problems.

Erosion on Arthur's Seat has become a major issue recently. However, there has always been some erosion and where this occurs in suitable soil on a south facing slope (and therefore sunny and warm) one can look for small holes in the ground where the solitary bees are breeding. In June 1983, we found about 150 holes in an area of some 6 feet by 2 feet on a path on the hill, east of Dunsapie. Numerous *Halictus* species of bees were commuting to and from the holes. The comparative absence of flowers in the vicinity was puzzling until we found some of the tiny bees on the abundant gorse blossom. Obviously this is a major food plant here for these insects.

At Aberlady, too, eroded areas are favoured by many species. Ants, solitary bees, spider-hunting wasps and digger wasps (*Crabro* and *Mellinus* species) frequent shingly or sandy soils with sparse vegetation and the mini-sand cliffs at the mouth of rabbit burrows. The life style of the solitary wasps resembles that of the bees but, instead of pollen, their breeding burrows are stocked with live prey. *Crabro* and *Mellinus* paralyze flies by stinging them and lay an egg or eggs on the living food store in the burrows before closing the entrance. Parasites such as satellite flies and Ruby-tailed Wasps take advantage of this stored food by nipping in to lay an egg of their own.

The beaten track past Jovey's Neuk at Aberlady Point has hundreds of solitary bees in July taking advantage of an eroded and sunny site to dig their burrows. They pay no attention to the dozens of people who walk the path and the walkers, in turn, never seem to notice them! The solitary bees have their own parasites including homeless bees or *Nomada*. We have caught *Nomada* species near the burrows of *Andrenas* on Corstorphine Hill and on a south facing bank at Straiton Pond.

There is another angle to this erosion 'problem' at Aberlady. It is a policy to restrict walking to a few well-defined paths. Walk along these paths in breezy sunny weather in summer and very obviously the butterflies, damselflies and numerous other insects are using them as shelter areas to bask in the sun. Beside the paths are many of the low growing plants, such as Grass of Parnassus, finding a niche between the hard trodden centre area, and the thick cover of tall grasses and Meadow Sweet. Obviously paths have the effect of greatly diversifying the range of habitats, so surely it would be beneficial to have more paths rather than fewer through the high vegetation. The reason given for channelling the public along a very few tracks is to avoid disturbance to breeding birds. In the old regime of sheep grazing there were innumerable tracks through much shorter vegetation and far more breeding Lapwing, Redshank, Dunlin, Skylarks and Meadow Pipits. With the present waist high jungle we have lost three species and gained a few more Reed Buntings and Sedge Warblers. Eider will not nest in long vegetation and those birds which do, such as Partridge and Pheasant, require an adjacent track to lead their chicks away.

A path is a highway for many species. Pygmy Shrews and once a Water Shrew have been seen at Aberlady and the hordes of emergent tiny toadlings depend on paths. It is time that erosion in its many facets is given proper place in reserve management.

E.M. and R.W.J. Smith

SOME FUNGI FROM YELLOWCRAIG

To see the greatest variety of the larger fungi, forays are traditionally held in woodland areas in the autumn. However, autumn is not the only time that fungi can be found and woods are not the only places to look for them. My visits to the sand-dunes at Yellowcraig have been at various times of the year and yet nearly always there are interesting fungi to be seen, not only in the plantations but also on the open dunes.

Following the main track into the nature reserve from the public car-park, one used to pass an ancient Sea-Buckthorn (*Hippophae rhamnoides*), which regularly produced a large hoof-like fungus that we can dub the 'Sea-Buckthorn Polypore' (*Phellinus hippophaecola*). It is a parasite restricted to this one host, though it is a close relative of *P. pomaceus* that causes heart-rot in plum and other fruit trees. Although it was previously known at least in Yorkshire, it seems that its discovery at Yellowcraig may have been the first Scottish record. Sadly, several of the old trees that it grew on have been chopped down and cleared away in the last few years, though smaller specimens of the fungus may be seen on a few of the remaining trees.

The fungus begins as brown, velvety, spherical or cushion-shaped growths, an inch or so across, scattered along the major branches or on the main trunk. Those that develop further grow into the typical hoof-like form, perhaps several inches wide. I have seen it now in several places between Yellowcraig and Gullane and also at Bilsdean. It seems to occur only on mature trees, not in young scrub, and it is tempting to suggest that it only occurs where the Sea-Buckthorn may be native.

A national survey of Sea-Buckthorn was carried out a few years ago and it was accepted that it is native up the east coast of Britain as far as the Berwickshire - East Lothian border, doubtfully native elsewhere in East Lothian and an introduction in other parts of Scotland. Certainly it looks native on the coast around Yellowcraig. Yet further along the coast near Longniddry, where there are a number of old trees, obviously planted along the roadside, the fungus seems to be absent, nor have I found it on planted Sea-Buckthorn elsewhere. The precise distribution of *P. hippophaecola* is something that E.N.H.S. members might care to investigate; all it needs is the determination to push into dense, spiny Sea-Buckthorn thickets!

After suitably damp weather, the dune pasture can be studded with fungi, especially *Nolanea sericea*, a common brown toadstool throughout the year on lawns, playing-fields and the like and particularly abundant on coastal turf. With its smell of flour, the silky sheen to its cap and its mature gills pink from the colour of its spores, it is easily distinguished from all but one or two closely allied species. Particularly towards late autumn, it is accompanied at Yellowcraig by the brightly-coloured Wax-Caps

(*Hygrocybe* species). These include common grassland species such as the pure white Snowy Wax-Cap (*H. nivea*) and the green and yellow, appropriately named Parrot Wax-Cap (*H. psittacina*). However, where there is more lime in the soil, one can also find *H. conicoides*, a much less common species of sandy, calcareous turf, usually near the sea. With its bright red, narrowly conical cap, blackening with age, it closely resembles the common lawn species, *H. conica*, the Conical Wax-Cap, but differs in its deep rosy-red gills.

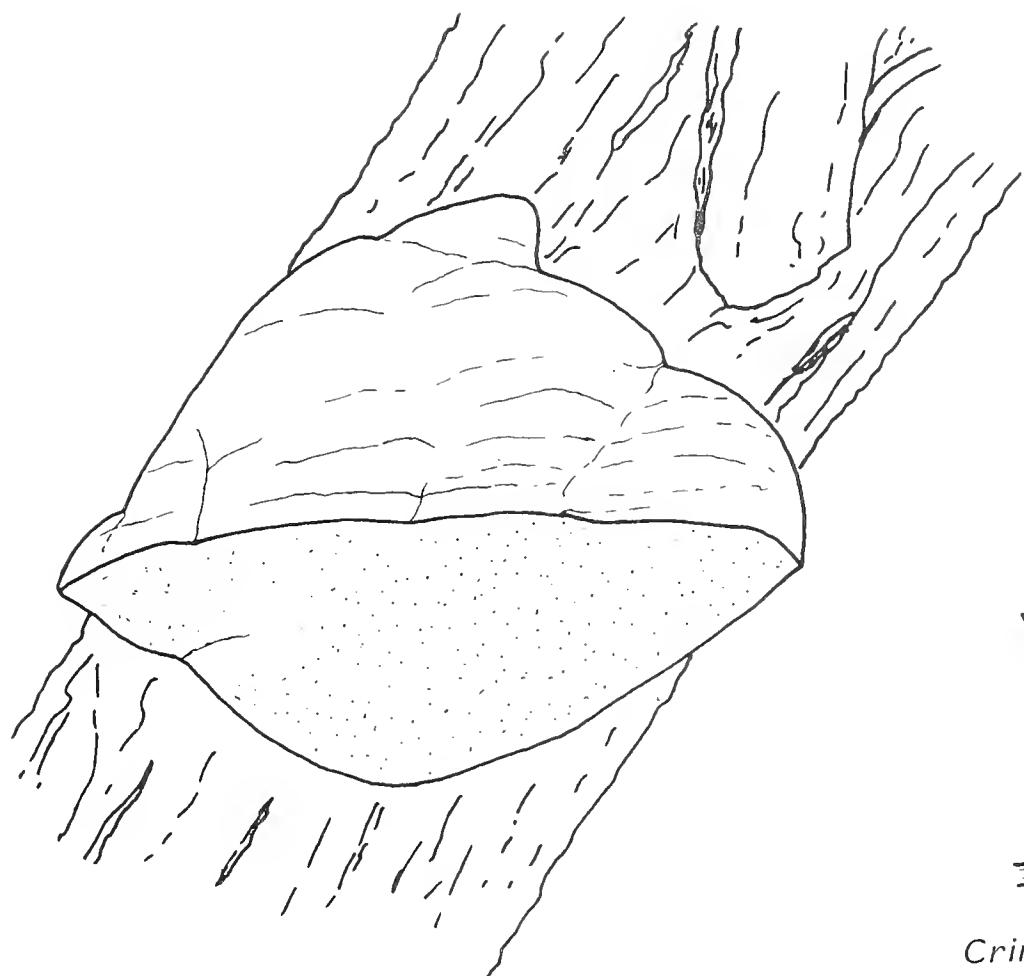
Another late-season group of fungi are the Earthtongues (*Geoglossum* species), a particular interest of mine. These black, slender, tongue-like fungi, around an inch high, sometimes appear in remarkable numbers, projecting from old lawns and short turf. There are several very similar species, distinguishable only with a microscope, but the only one I have found so far at Yellowcraig is *G. cookeianum*, a typical sand-dune species. For some reason it appears mainly at Yellowcraig around nature-trail posts; presumably the extra trampling is beneficial to it in some way.

The open sand-hills, dominated by Marram Grass, do not, at first, look likely ground for fungi, but some of the most interesting species are to be found here. The mossy hollows can have species of Blewit (*Lepista saeva* and *L. sordida*) and the rare, but frankly unattractive *Rhodocybe popinalis*. However, more specialised fungi occur even on the dry, sandy hummocks, among them a tough little fungus with its cap and stem clothed in brown hairs, *Crinipellis stipitarius*. It has the ability to revive after drying out, like species of the closely related genus *Marasmius*, so while it is not restricted to sand-dunes, it is well adapted for life in this hostile habitat, where it grows on old stems of the Marram Grass.

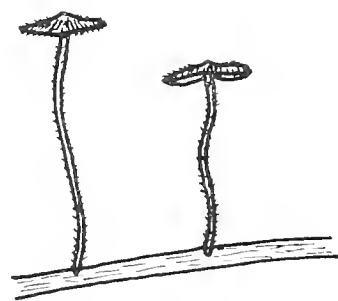
A certain, damp, lime-rich hollow back near the trees has special plants like the Frog Orchid and the Variegated Horsetail and also has some nice fungi. St George's Mushroom (*Calocybe* [or *Tricholoma*] *gambosum*) appears here in the early summer, as does another edible species, the Morel (*Morchella esculenta*). The Morel is a fairly frequent fungus on fertile ground in the south of England, but much rarer and mainly coastal in Scotland. Unfortunately, due to its edibility, often all one sees at Yellowcraig are the bases of neatly cut stems, but in the spring of 1983 there was also a large population growing amongst Butterbur further along the coast near Longniddry.

Passing the Yellow Craig itself, where I have seen the white, dinner-plate-sized toadstool, *Leucopaxillus giganteus*, and more regularly, the large fairy-rings of the Fairy Ring Champignon (*Marasmius oreades*), one can enter a small Sycamore wood. Generally, Sycamore woods are not especially productive of the larger fungi, but as many E.N.H.S. members know, this wood regularly produces Earth Stars (*Geastrum triplex*). The unopened fruiting body looks remarkably like a tulip bulb, before the coating splits into the typical star-like shape, exposing the puffball-like interior. The fruiting bodies appear in the late summer or autumn, but persist through to the following spring. Other species of Earth Star are also sometimes found on this coast.

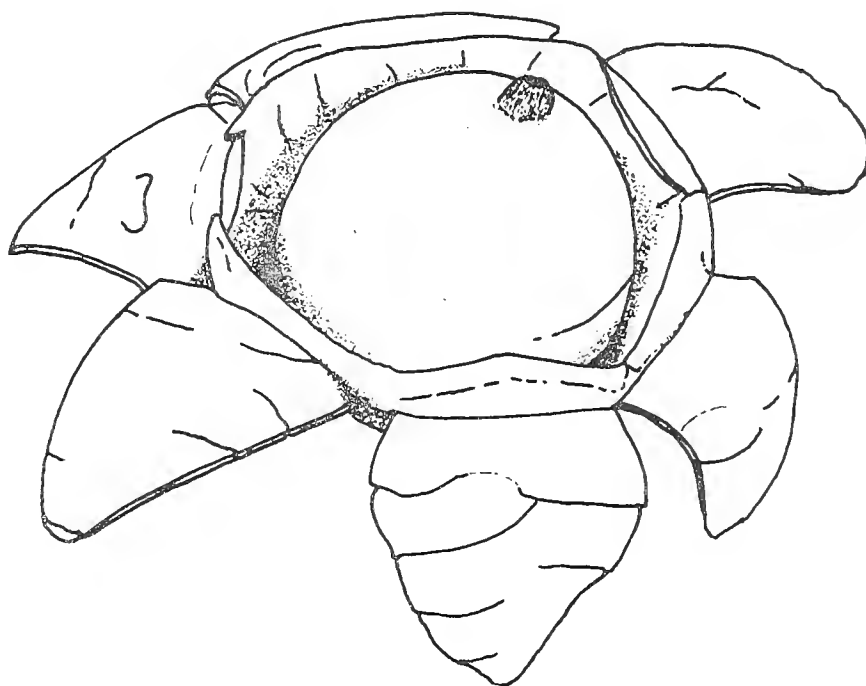
Dead Man's Fingers (*Xylaria polymorpha*) is a black, club-like fungus, rather like an Earthtongue but larger, tougher and growing in clusters on old stumps and logs. It is a very common fungus and predictably occurs in this wood. Also here is its much less common, more slender relative, *X. longipes*, which is more specific to Sycamore and related trees.



Phellinus hippophaecola x $\frac{1}{2}$



Crinipellis stipitarius
x $1\frac{1}{2}$



Geastrum triplex x1

I have never explored the pine plantations during the main fungus season and cannot say how rich they are. The great rarity here is *Chroogomphus corallinus*, a large, waxy toadstool, previously known from Leicestershire, but I have not yet seen this myself. In the spring, a common species is *Strobilurus* (or *Pseudohiatula*) *tenecellus*, a small, brown toadstool with pure white gills, emerging from buried pine cones. Another fungus coming up from pine cones is the Ear-Pick Fungus (*Auriscalpium vulgare*). This is also brown, and hard to see amongst the dead pine-needles, but the underside of the cap shows it to be much more interesting than it first appears. Instead of having gills, this fungus releases its spores from the surfaces of a mass of small greyish spines. It is thus not a true toadstool, but is conveniently grouped with the hedgehog-fungi. Its common name refers to its resemblance in shape to small spoons, once used to remove wax from people's ears!

For richness of fungal species, Yellowcraig cannot be expected to rival the better natural woodlands of the region, or the productive grounds around Hopetoun House. However, for some of the more uncommon and specialised species, the dunes and woods of Yellowcraig are often well worth a visit.

The majority of the fungi I have mentioned are illustrated in Roger Phillips' excellent "Mushrooms and Other Fungi of Great Britain and Europe", though on sand-dunes one must be prepared for unusual species that are not, as yet, described in any British book.

A.J. Silverside

THE DRAGONFLIES OF THE LOTHIANS

Eight species of Odonata, 3 dragonflies and 5 damselflies, breed in the Lothians. Damselflies are of slighter build and are more feeble flyers than dragonflies. At rest damselflies perch with their wings closed over the abdomen whereas mature dragonflies usually hold their wings flat out at their sides but sometimes carry them forwards.

The maps on pages 20 and 21 have been drawn from the observations made by T. Boyd, E. Gillespie and the author over the past eight years. More records are required from the East Lothian hinterland.

The symbol ■ denotes breeding either proven or very likely. ▲ denotes present but with no evidence of breeding. Each symbol represents a particular site. The county boundaries are pre-regionalisation.

Aeshna juncea - Common Aeshna or Common Hawker

The male is a 3 inch long dragonfly having a dark body with bright blue paired spots and yellow markings. The female is less brightly coloured. It is largely confined to the west of the Lothians but may occur further east on high ground. The East Lothian records are of individual sightings in autumn. In Midlothian ponds dug on the S.W.T. Red Moss, Balerno reserve in 1981 had this dragonfly breeding in them for the first time in August 1983.

Experimental introduction is being tried at Milkhall Pond, where many adults were seen this summer but breeding has not yet been proved.

Sympetrum scoticum - Black Sympetrum or Black Darter

About $1\frac{1}{4}$ inches long the mature male is black and 'wasp-waisted'. Females and immatures have a diagnostic large black triangle on the thorax behind the head. Its stronghold in the Lothians is in peat bog pools in the west. It colonised the Red Moss in 1982 and good numbers were breeding in 1983.

Sympetrum striolatum

Immatures and females are yellow with black markings, very similar to *Sympetrum scoticum* but lack the black triangle. Mature males are red.

The only known sites for this species in Scotland are the Marl Loch and Dune Slacks on the Aberlady Local Nature Reserve. Common in England, and a well-known migrant, it appears to be at the northern limit of its range in East Lothian.

Enallagma cyathigerum - Common Blue Damselfly

There are several, very similar, blue and black banded damselflies. To be certain of identification they must be examined at close quarters. Fortunately *Enallagma* can be readily distinguished from all the others which are of the genus *Coenagrion*, by looking at the side of the thorax (see diagrams on page 20).

Enallagma cyathigerum has one short black line there whereas *Coenagrion* species have two such lines as shown. The second segment of the abdomen of the male has a black marking like a goblet. It is common and widely distributed.

Coenagrion puella - Common Coenagrion

This damselfly is easily confused with *Enallagma cyathigerum* which often occurs at the same sites. The U-shaped mark on the second segment of the abdomen is a useful character to separate it from other *Coenagrion* species (see diagram on page 20).

In England it is common and widespread. It was first recorded from South-east Scotland from the Union Canal in Stirlingshire in 1976. It has become more common and on stretches of the Union Canal, where formerly it was outnumbered by *Enallagma cyathigerum*, it now is the common species. It has been recorded, so far, from only one site in Fife and from nowhere north of that.

Pyrrhosoma nymphula - Large Red Damselfly

This damselfly is red in colour. It flies early in the season and may be more widespread than is shown on the map.



Enallagma cyathigerum



Coenagrion sp.

side of thorax



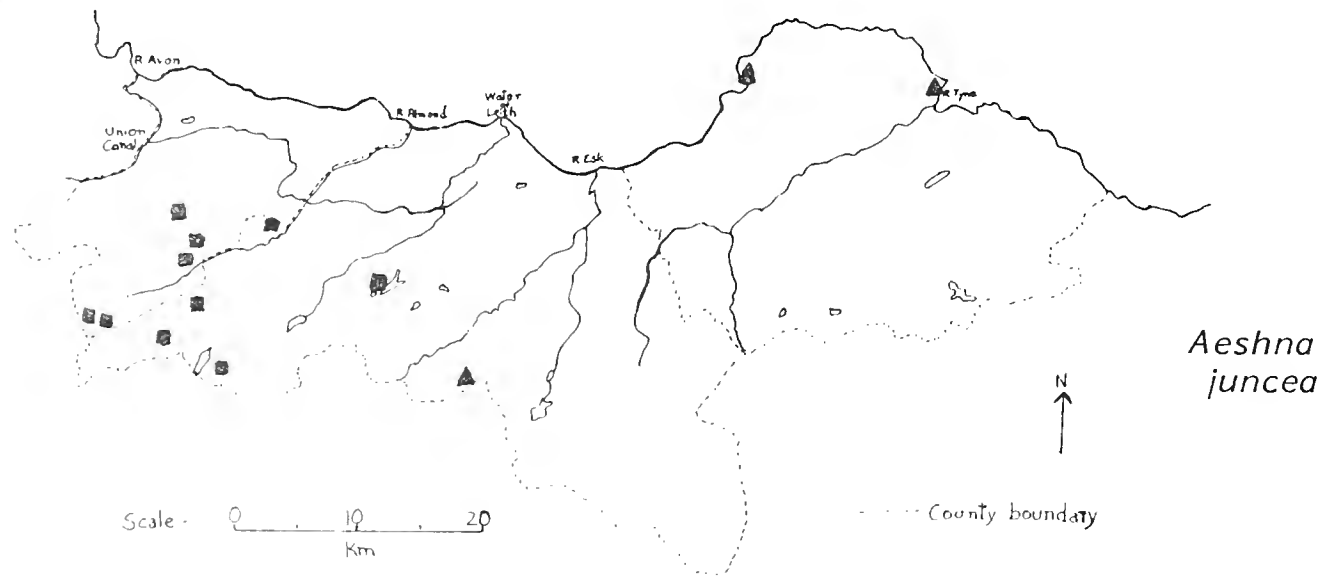
Enallagma cyathigerum



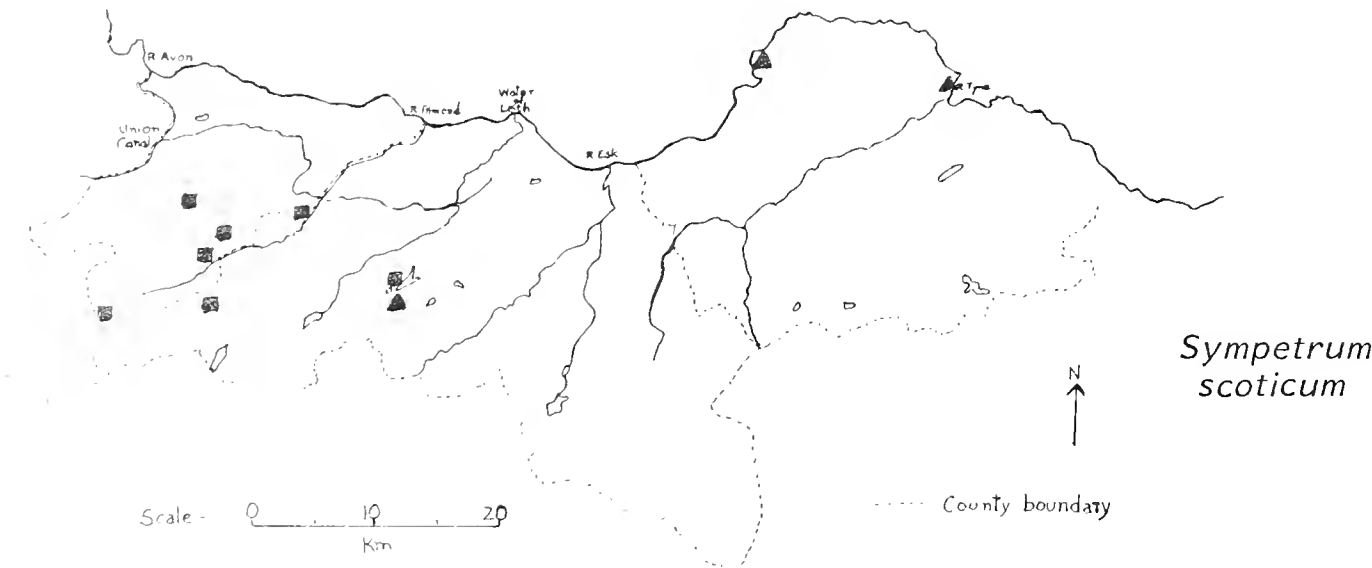
Coenagrion puella

2nd segment of abdomen

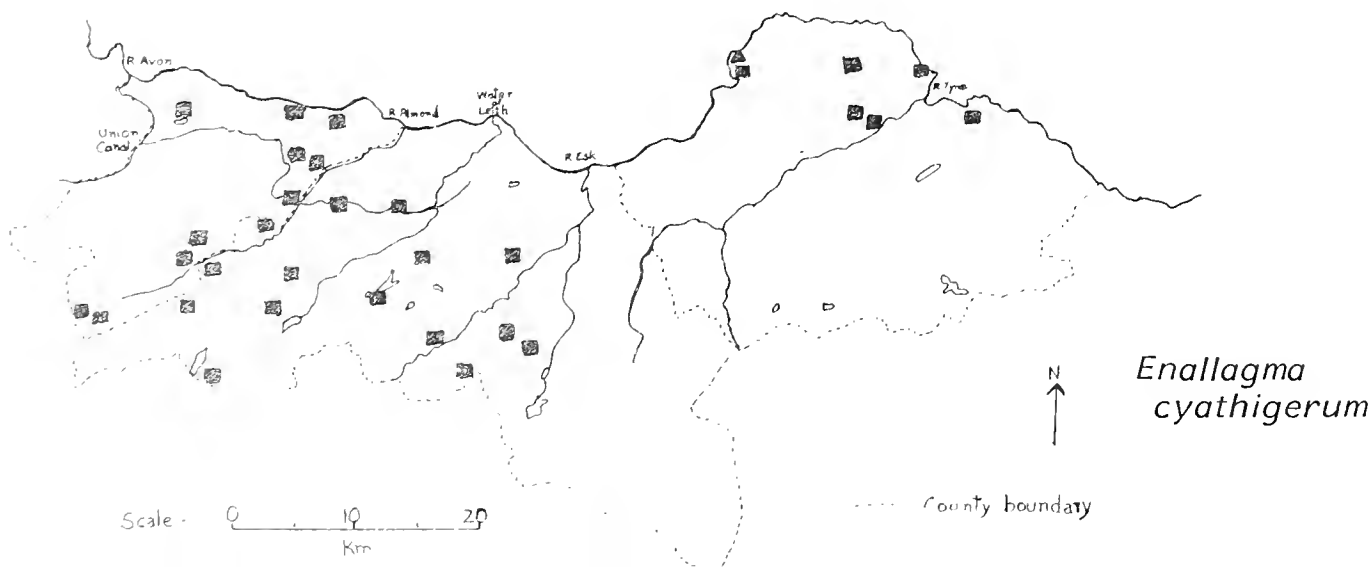
MAPS



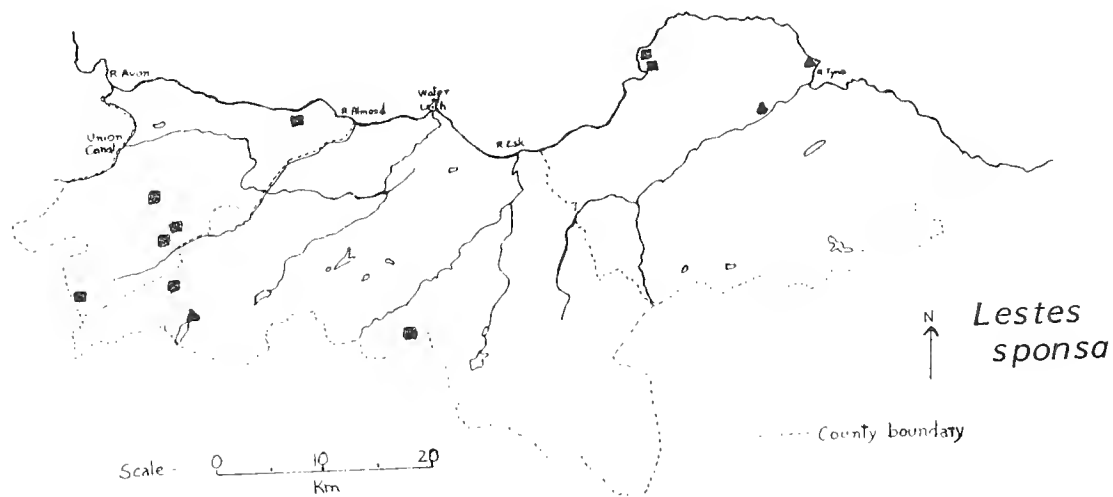
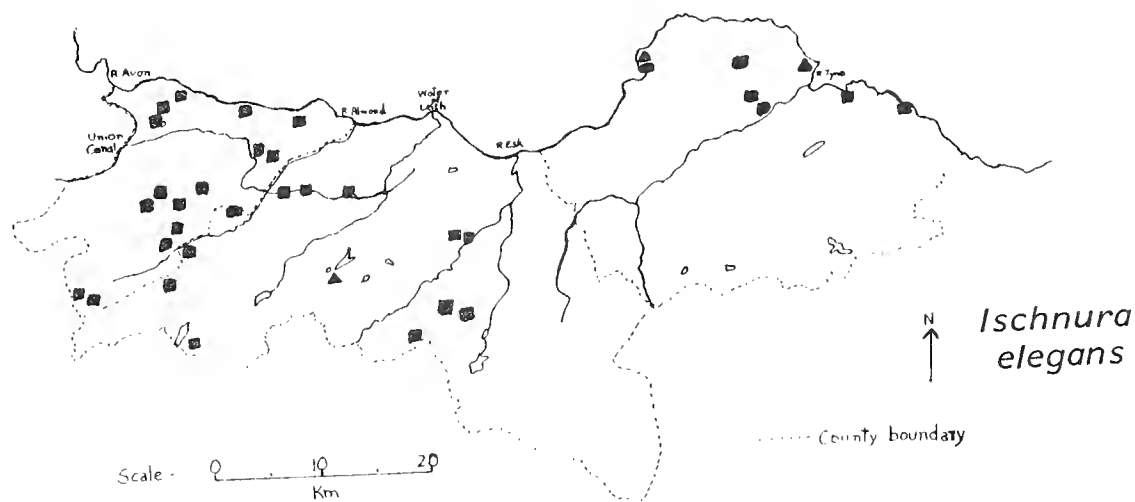
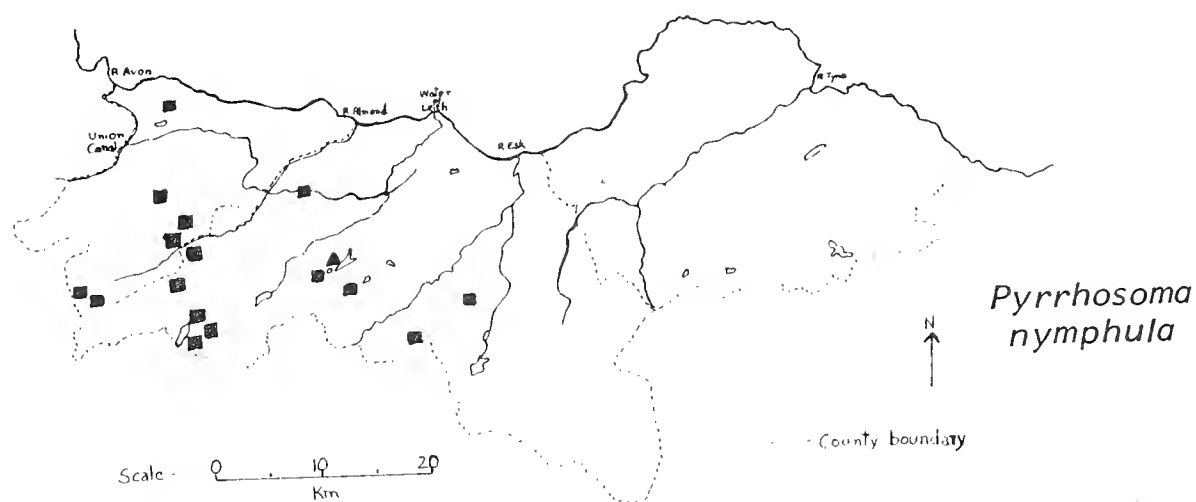
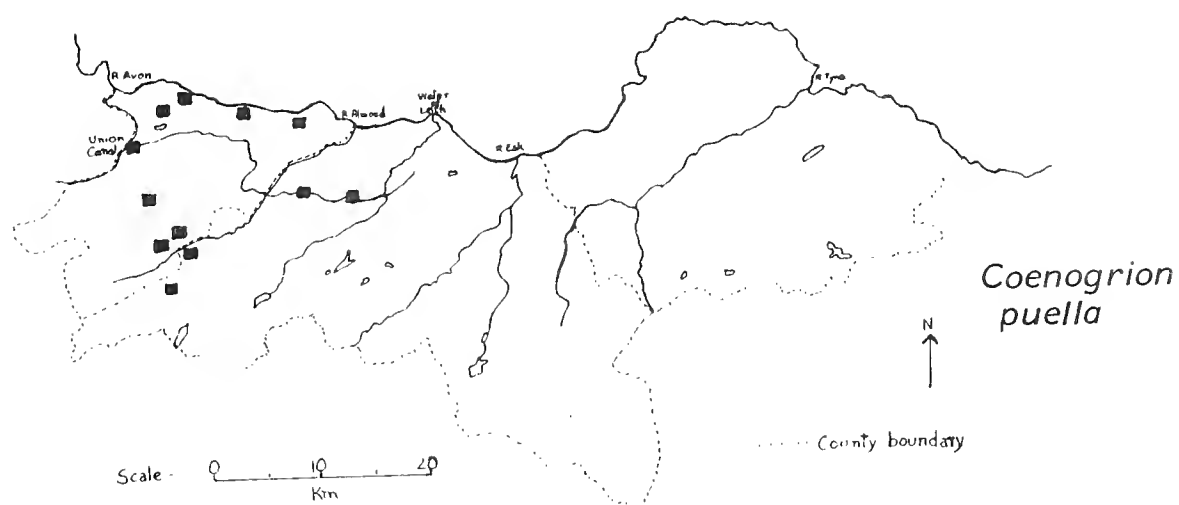
Aeshna juncea



Sympetrum scoticum



Enallagma cyathigerum



Ischnura elegans - Common Ischnura

This black damselfly has a bright blue 'tail-light'. It is common and widely distributed.

Lestes sponsa - Green Lestes

At a casual glance *Lestes sponsa* could be confused with *Ischnura elegans*. Its blue 'tail-light' is much dimmer and the main body colour is bronze-green. When perched its wings are held partly open which easily distinguishes the genus from all other damselflies. It is a late season species and its distribution may be more widespread than shown.

E.M. Smith

References

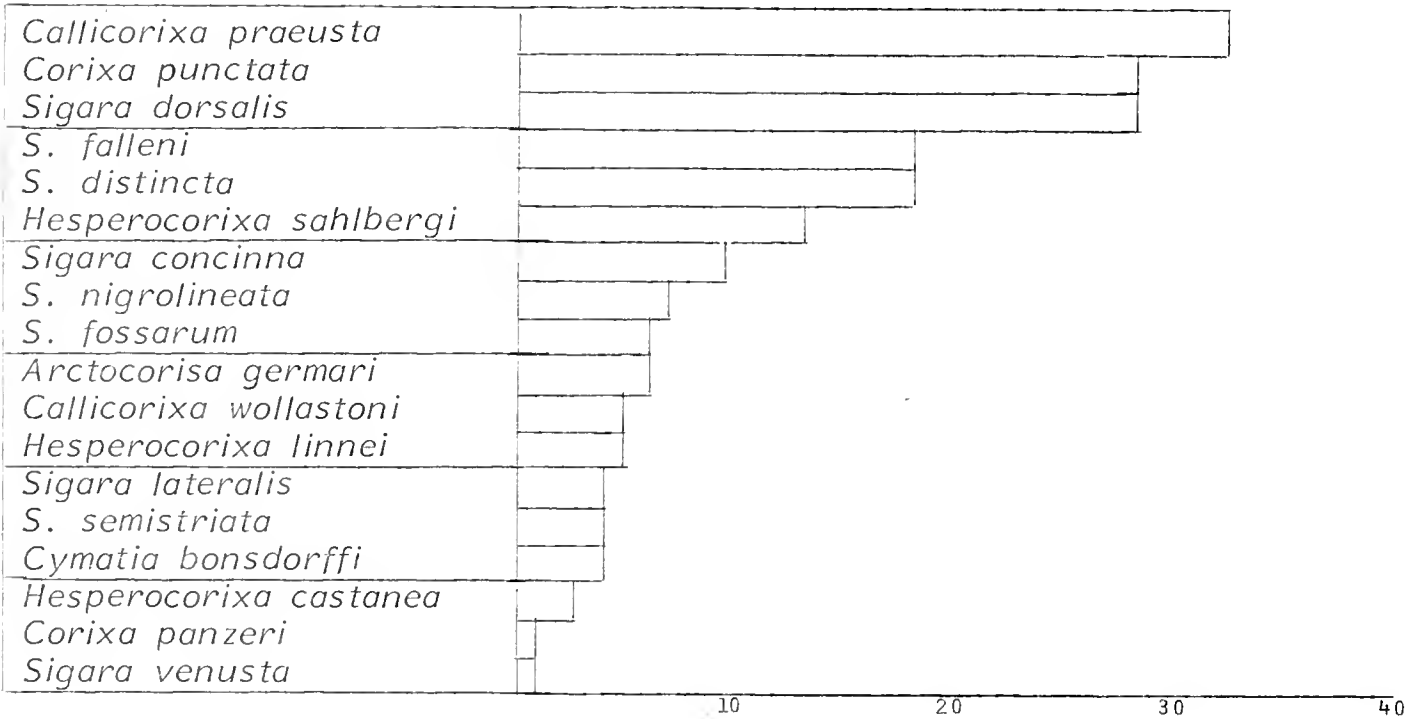
Boyd, T. and Smith, E.M. (1980, 1982). E.N.H.S. Journal.
Hammond, C.O. (1977). The Dragonflies of Great Britain and Ireland.
Smith, E.M. (1977, 1978, 1980, 1982). E.N.H.S. Journal.
Smith, R.W.J. (1982). E.N.H.S. Journal.

WATER-BUGS OF THE LOTHIANS

The water-bugs belong to a group known as Heteroptera. In the Lothians this group consists of several species of Lesser Water-boatmen, 5 species of Pond-skaters, 2 species of Water-crickets, 1 species Back-swimmer and 1 species of Water-scorpion. The following two histograms show the relative abundance of Lesser Water-boatmen and Pond-skaters within the Lothians.

Corixidae (Lesser Water-boatmen)

No. of sites where species were
found during 1977-1983
(total no. of sites visited was 72)



Corixids are the aquatic insects commonly known as Lesser Water-boatmen. *Cymatia bonndorffi* is unusual amongst boatmen as it is carnivorous; the others feed mainly on detritus or filamentous algae when it is plentiful. Observations in laboratory conditions have shown Boatmen to feed on small invertebrates when the insects have been starved for 2 days.

If the water is badly fouled by animal excreta, then *Sigara lateralis*, having a liking for such water, is the species most likely to be found. When the pond bottom has a thick layer of decaying leaves then *Hesperocorixa sahlbergi* is the most likely inhabitant. *Corixa panzeri* is a rare species which is plentiful in the Marl Loch, Aberlady. It is a species which likes water with a high calcium content and the Marl Loch sits on the site of an ancient marine shell bed and the water has a pH of 8.2. The habitat is therefore most suitable for this species. The only other known Scottish record of *C. panzeri* is of 4 specimens found on Taransay, Lewis, in 1938. *Sigara scotti* and *Glaenocorisa propinqua* are not found in the Lothians, but both are fairly plentiful farther north.

There are 33 species of Corixidae in Britain. Of the 13 species not listed:

- 4 are rare
- 4 are found in Southern England
- 2 are brackish water species
- 1 is found only in Ireland

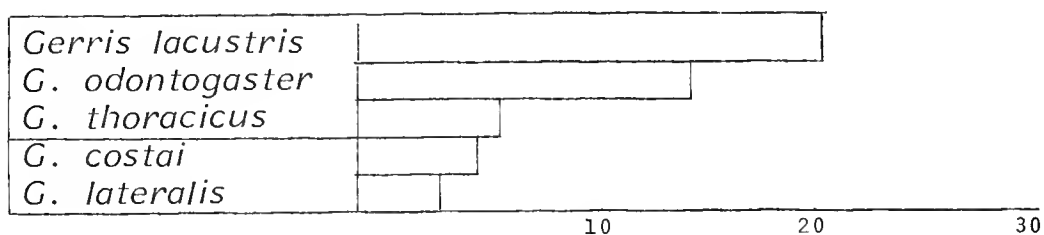
Micronecta poweri is frequent throughout England and Ireland, but in Scotland it is recorded only from Islay in the Hebrides.

Arctocorisa carinata is almost confined to peat pools above 500 metres.

To find any of these in the Lothians would be a very pleasant surprise.

Gerris (Pond-skaters)

No. of sites where Gerris was
found during 1977-1983
(total no. of sites visited was 42)



Gerris costai seemed to prefer small pools in heather/Sphagnum moorland. *G. thoracicus*, although found in similar habitats, was more commonly found in small ponds on farmland. *G. lacustris* and *G. odontogaster* were found in all kinds of ponds except upland moorland. Winged and the wingless form of *G. lateralis* were found on Milkhall Reservoir, S.W.T. Reserve.

Water-cricket, Backswimmer and Water-scorpion

The two species of Water-crickets, *Velia caprai* and *V. saulii*, and the Backswimmer, *Notonecta glauca*, are all common throughout the Lothians. The Water-scorpion, *Nepa cinerea*, has been found in the Union Canal and at Aberlady.

E. Gillespie

Photographs on opposite page taken by the author:

<i>Corixa punctata</i>	-	length	11 mm
<i>Notonecta glauca</i>	-	"	15 mm
<i>Nepa cinerea nymph</i>	-	"	10.5 mm to tip of breathing tube
<i>Velia caprai</i>	-	"	7 mm
<i>Gerris sp</i>	-	"	10 mm

WILD FLOWER NAMES

Recently, an old tattered book was given to me. The title 'Botanical Names of Wild Flowers' - what they mean, how pronounced - by Colonel J.S.F. Mackenzie, author of 'Wild Flowers and How to Tell Them at a Glance'. Here are some extracts from it.

Acetosella (as-et-os-ella) from Latin '*acetum*' (vinegar), name on account of sour taste of plants.

Aconitum - Monkshood from Greek '*akon*' (a dart) because darts were smeared with poison extracted from the plant.

Arillus - in some plants, after the egg is fertilised, the stalk by which the seed is attached to the inside of the ovary swells up and covers the seed, more or less with a pulpy substance called tril or arillus, as is the case with the seed of the Yew.

Avignon berries - the berries of the Buckthorn (*Rhamnus*). The juices of the different kinds of Buckthorn are the raw material from which artists and calico printers get yellow and green colours.

Bedstraw - *Galium verum* - said to have been the straw in the manger where the Saviour was born.

Borage - in former days Borage was noted as one of the four 'cordial flowers' most worthy of esteem for cheering the spirit, Rose, Violet and Alkanet being the other three.

Butterwort - *Pinguicula* - an insectivorous plant, gets the name butter from the greasy feel of the leaves. To make a kind of cream cheese, Laplanders put the leaves into reindeer milk. The leaves do not set in the same way in cow's milk.

Codlins and Cream - Great Willowherb - has a flower which smells like boiled apples. Codlin is an old word for apples fit for boiling or baking.



Corixa punctata



Notonecta glauca – dorsal view



Nepa cinerea nymph



Velia caprai

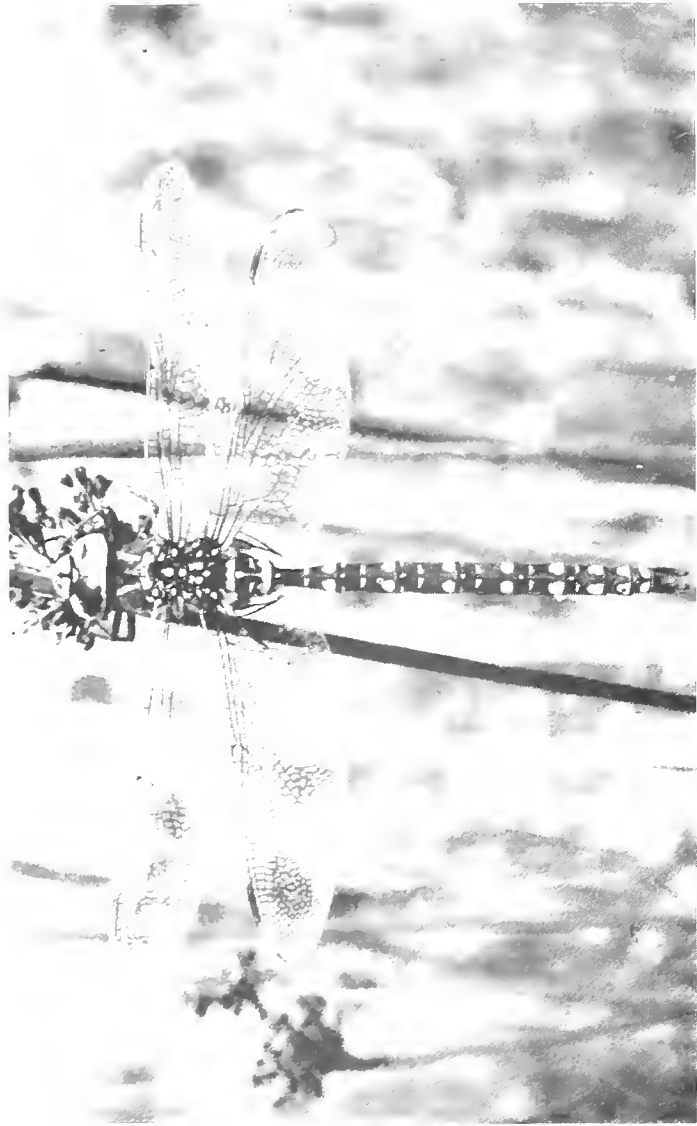


Gerris sp



Bird watching at Hummell Rocks

Gunn Photographic Competition 1983



First. Dragonfly, by Bob Smith.



Second equal. Natural forest at Rothiemurchus, by Elizabeth Farquharson



Second equal. Roe deer, by Nora Henderson.



Third. Small tortoiseshell butterfly, by George Bell

Fern - Anglo Saxon 'Fearn'. Among the Celts the Fern was a sacred plant. The seeds being invisible made those who carried them in their pocket also invisible.

Fool's Parsley - although somewhat like, only fools would mistake it for real parsley, hence its name. Botanical name *Aethusa* (ae-thu-sa) - Greek 'aetho' (to burn) - derived from the acidity of the plant.

Ground Ivy - on account of its bitter property, before hops became common, it was used in the making of beer. Hence its name, one of many, Ale-hoof.

Galium (ga-le-um) - from Greek 'gala' (milk). The plants were formerly used for curdling milk. Lady's Bedstraw gets its name from its soft puffy stems having been used in former days as bedding, even by ladies of rank. The phrase 'being in straw' when the woman is confined is said to come from the straw being laid down in front of the house to deaden noises (see also Bedstraw above).

Noli-Me-Tangere (no-li-tan-je-re) - from Latin 'noli' (don't), 'me' (me), 'tangere' (touch) because when ripe the seeds are ejected from the pod on the slightest touch (Touch-me-not - *Impatiens noli-tangere*)

Grass - Whitlow Grass, Goosegrass, Scurvy-grass - on Excursions I have been asked "Why grass?", when I've pointed out these plants. I have to say that I do not know. I have enquired in many quarters, but no satisfactory answers.

So, 'Why grass' - does anyone know?

J. Carlyle

NOTES ON NATURAL HISTORY

Some 1982 observations

Mink (*Mustela vison*), 14.8.82, below Dean Bridge, Water of Leith, S.W.T. excursion, seen by about 25 people. See E.N.H.S. Journal for 1982, page 24.

Sightings of Heron - in 'Scottish Birds', Vol. 12, No. 4, p. 130 (Winter, 1982) an appeal was made for reports and sightings of colour marked Herons (*Ardea cinerea*). Two such sightings were made at Hopetoun.

On 16.9.82, a bird, left wing yellow, right wing green, was seen on the south side of the Forth from the road from Queensferry to Society. This had been marked as one of 5 well-grown pulli at Tayport on 18.7.82.

There was another sighting of a bird departing from the round pond, Hopetoun House, on 19.11.82, that had yellow on the right wing. This had been marked in June 1982 at Moneydie, on the B8063, a few miles north of Perth.

C.P. Rawcliffe

Observations throughout 1983

- 14.1.83 Common Squid (*Loligo forbesi*) - mouth of Midhope Burn (NT 079794), dead but fresh. (C.P.R.)
- 16.1.83 Along Silverknowes foreshore, dead Common Squid, washed up by the dozen. (J.G., E.F.)
- 10.2.83 Thirty Redwing feeding on the Meadows near the Royal Infirmary on the only area where the ground was not frozen hard. (E.F.)
- 13.2.83 In a garden in north-west Edinburgh a male Blackcap was seen at the bird table. It was joined by a hen bird later in the week. The pair stayed until 8th April. (C.S.)
- 25.2.83 Guillemot (*Uria aalge*) - River Forth (NT 079795) (C.P.R.)
- 19.3.83 Large amount of frog spawn at and just above tree line in Glen Einich, Speyside. (J.G., E.F.)
- 26.3.83 Mink (*Mustela vison*), Vogrie Country Park - footprint of Mink in a sandbank along the River Tyne. (C.P.R.)
- 26.3.83 We watched 6 Mountain Hares chasing and playing on Meikle Sayes Law, Lammermuirs, in the snow. They watched us and then ran ahead and started their antics again and again. (M.W., C.S.)
- 30.3.83 Near the top of Norman's Law in Fife on a sunny breezy day, we found 20 groups of Ladybirds. Each group numbered between 5 and 28 insects. (S.L., M.M., C.S.)
- 1.4.83 Hawfinch (*Coccothraustes coccothraustes*) 11.00 h, Royal Botanic Garden, male on top of tree in the birch lawn. (C.P.R.)
- 2.4.83 Raven (*Corvus corax*) - Medwynhead, Pentland Hills (NT 088515) at 16.15 h, one was drifting westward as though food searching; mobbed briefly by four Carrion Crows. (C.P.R.)
- 15.4.83 Guillemot (*Uria aalge*) - dead bird found in the North Deer Park, Hopetoun House. (C.P.R.)
- 16.4.83 Four adult hind, 2 first year Red Deer lying dead by Edenden Water, north of Calvine. (J.G., E.F.)
- 17.4.83 Holly berries still uneaten, Loch-an-Eilein, Speyside. (J.G., E.F.)
- 23.4.83 *Sclerotinia tuberosum*, a fungus parasitic on Anemone, which it eventually kills, seen S.W.T. Reserve, Roslin (confirmed by Dr Brian Coppins). (E.F.)
- 9.5.83 Hawfinch (*Coccothraustes coccothraustes*) - a pair were feeding at the Royal Botanic Garden beneath a Cotoneaster shrub where there were many split seeds. The male tossed debris to one side in the style of a feeding Blackbird. There was a continuous call note, "Zit, zit, zit". (C.P.R.)
- 12.5.83 Green Woodpecker (*Picris viridis*), Loch Cote, West Lothian (NT 975737), bird heard calling. (C.P.R.)
- 28.5.83 Two Slow Worms run over on Glen Cannich Road, $\frac{3}{4}$ mile from Cannich Village, Invernessshire. (W.B.G.)

- 4.6.83 *Auriscalpium vulgare*, the Ear-pick fungus, seen at Tynninghame.
(E.F.)
- 6.6.83 Bird Cherry (*Prunus padus*) in blossom at entrance to Roslin Glen - particularly beautiful this year.
(M.R.)
- 10.6.83 Poplar Hawk Moth (*Laothoe populi*) at Hopetoun House - a newly emerged male.
- 14.6.83 *Splachnum ampullaceum*, a moss growing on old dung, and commoner in the west and north, found near Moidart. (C.S., E.F.)
- 19.6.83 Orange-tip Butterfly (*Anthocharis cardamines*) on Hopetoun Nature Trail (NY 079794), one male: nearby single eggs were found on Garlic Mustard or Jack-by-the-hedge (*Alliaria officinalis*), a total of 4 laid individually. I was in the company of a family of Lepidopterists, which was most fortunate. The eggs are laid separately as the caterpillars are cannibal. (C.P.R.)
- 23.6.83 Sparrow Hawk (*Accipiter nisus*) near Rosebery Reservoir (NT 320564). A male with a juvenile Starling in its talons was in the middle of the road. It flew into an adjacent shelter belt, out of sight. Seconds later it was seen chasing its escaped prey.
- Three further observations of Sparrow Hawks seen later in the year:
- 30.7.83 Hopetoun House (NT 086791), a male was seen striking a Pied Wagtail (*Motacilla alba*) that was feeding on the Great Lawn - the prey escaped.
- 6.8.83 Yellowcraigs (NT 515817), a brief view of a flying bird.
- 10.8.83 Inverleith Park - good views were seen of a bird, judged without binoculars, to be a hen - time 16.35 h. (C.P.R.)
- 24.6.83 Sea Gooseberry (*Beröe cucumis*) - mouth of Midhope Burn (NT 079794) - four specimens in the sea at high water. Found by pupils of Corstorphine Primary School and identified from Collin's 'Pocket Guide to the Sea Shore', Plate 2.
- Jellyfish (*Aurelia aurita*) found under the same circumstances as above.
(C.P.R.)
- 26.6.83 A carpet of Cowslips as you turn the corner on to the coast road at Longniddry.
(M.R.)
- 2.7.83 *Mutinus caninus*, the Dog stinkhorn, beside the path at Edgelaw Reservoir.
(E.N.H.S. outing)
- 16.7.83 *Amanita crocea* in woods near Castle Serpill, Lochwinnoch.
(E.N.H.S. outing)
- 6.8.83 Dot Moth (*Mamestra persicariae*), Yellowcraig (NT 514857), a specimen was seen resting, on herbage at side of path.
- Small Elephant Hawk Moth (*Deilephila procellus*), Yellowcraig (NT 515817) - a caterpillar of this moth was found on short grass adjacent to a patch of Bedstraw sp. which is its food. It feigned death, a characteristic piece of behaviour, up to the moment I was ready to photograph it.
(C.P.R.)

8. 8.83 Ash Gall - Common Ash (*Fraxinus excelsior*) - at Inverleith Park on the footpath that runs along the north side of the Grange cricket ground was heavily infested with a gall.
Reference to 'Plant Galls' by A. Darlington, would indicate that the cause was a gall-mite, *Eriophyes fraxinivorus*. The galls took the form of ill-shaped brown lumps, about the size of walnuts, formed at the flowerhead. They were very conspicuous.
(C.P.R.)
- 11.10.83 *Lactarius brittanicus* growing in woodland strip along Greenbank Drive (confirmed by Dr Roy Watling).
(E.F.)
- 20.10.83 Portmore - Wheatear; 6 Whooper Swans - both at once!
(M.M.)
- 26.10.83 On edge of sand dunes facing the sea at Tynninghame, a dull coloured mouse grey fungus with caps 2 to 4 in. across pushing through the sand. Identified by Dr Roy Watling as *Melanoleuca cinerifolia*.
(E.F.)
- 26.10.83 Tynninghame - 2 Snow Buntings - near St Baldred's Cradle. (M.M.)
- 3.11.83 Bramblings with a mixed flock of Chaffinch, Greenfinch, Blue and Great Tits at Vogrie.
(E.G., C.P.R., M.R.)
- 24.11.83 Female Blackcap feeding on Sea Buckthorn berries at John Muir Country Park.
(E.G., C.P.R., M.R.)

General observations

From C.P.R.

At the west end of the path that leads from Inverleith Park to Aboretum Avenue there is an Elm grafted on to another Elm, which I judge to be Camperdown Elm, as it fits the description in Mitchell's Field Guide and closely resembles the specimen in the nearby Royal Botanic Garden.

From M.R.

The 'reeling' of wrens everywhere, indicating that numbers have recovered after the disastrous drop following the severe winter of 1981-82.

The antics of two young foxes observed frequently in suburban gardens where they are quite at home. On 8.8.83, they were playing round a flower border at 5.00 a.m.

The long flowering period of early flowers in our 'soggy' spring.

The abundance of Hawthorn blossom, thick like snow, on all branches throughout the countryside this Spring.

Forth Island Bird Counts - 1983

	Craigleith	Lamb	Fidra	Eye- broughty	Inchkeith	Inch- mickery
Fulmar	94	20	119		512	6
Cormorant	49	115		55		17
Shag	356	283	66		5	42
Gt Bl Back	3	1				
Kittiwake	610+	91	497		254	
Common Tern			30			350+
Arctic Tern			14			
Roseate Tern						6
Sandwich Tern						475
Razorbill	44		33		30	
Guillemot	1700 bds	1540 bds	113 bds		13	
Puffin	1900 bds		80		435 bds	

All figures are sites or pairs except where indicated as single birds.

Despite the usual changeable June weather we landed on all the islands this year although we had only a rushed half hour on the Lamb due to the heavy swell and lowering skies. Breeding bird numbers have, generally, marginally improved with the exception of Roseate Tern which has slumped to a dangerous level. After heavy spring mortality of Razorbills along the east coast of Britain it was interesting that numbers were down on Craigleith, similar on Fidra and up on Inchkeith. Shags have increased by some 5% and a pair bred, for the first time, at Dunbar Kittiwake colony.

On Fidra there was an unsolved mystery. We found a single egg on a scrape on the ground which was like a large Common Tern or small gull egg. Looking from a distance we saw an Oystercatcher sit on this egg presumably to distract our attention from its own two eggs some 10 yards away. Could the egg have been laid by a Black-headed or Common Gull or was it an abnormal Herring Gull's egg - which would normally be laid on a nest rather than a scrape. It was not a Sandwich Tern egg and the only other tern candidate would have to be a Caspian which has not yet bred in this country! We will never know.

Also on Fidra, we had a nice view of a Shelduck brooding at least 5 newly hatched chicks in a hole nest under a large stone. This is a difficult bird to observe on the nest. Greylag Geese bred on Inchkeith again this year. There were 3 adults and a tiny young on 22nd May and the pair and big young were still present four weeks later. Eight of these birds flew over Fidra during our visit and it would seem to be only a matter of time before they nest on this island.

R.W.J. Smith

Observations on Lepidoptera 1983

Despite the sunny summer I have not seen so many butterflies, Tortoiseshells particularly, this year as in 1982, probably because of the cold, wet spring. However, it seems to have been a good year for the Small Copper and Common Blue. I have never seen so many.

Butterflies:

Small Copper	Salisbury Craggs	- 6 July, 5, 31 August
	Corstorphine Hill	- 25 August
	South Gyle	- 28 August
Common Blue	Salisbury Craggs	- 6, 12, 22 July
	Arthur's Seat	- 5, 8, 31 August
Orange Tip	Faskally, Pitlochry	- 2 emergent females, 11 July

Moths:

Six-spot Burnet	Two flying on Salisbury Craggs - 22 July. This is the first time I have seen this moth, common on the East Lothian coast, on Arthur's Seat in twenty years of checking.
Small Elephant Hawk Moth	Yellowcraig E.N.H.S. Outing, 6 August (see Observations 6.8.83).
Vapourer Moth	Two larvae in a forest ride on Dumbarton Moor, 14 August, Grid reference NS 450795.
Broom Moth	Larva on Chief's Road, Drumelzier, Peeble- shire, 14 August (NT 140335).

W.B. Grubb

Tapping the Lines?

On 18th August, with three other members of the Edinburgh Natural History Society, I was driving up a quiet road between Innerwick and Elmscleuch. On the right was a line of wooden telegraph poles, each of which had been made with a series of three or four holes mounting to the top. These had probably been meant to hold wires, but had not been used. Suddenly, a Great Spotted Woodpecker skimmed across the road to the nearest pole and, to our astonishment, started to probe each hole from the lowest to the highest with its long bill; and, at every stage, it rushed round the pole and caught whatever was emerging at the other side! We were so close that we could even see some insects buzzing out.

The Woodpecker fed similarly at each pole in turn up the road, and then sat for a minute or two on the top of one. Very shortly, it put the whole procedure into reverse, descending the pole like a nuthatch.

I have once before seen a Great Spotted Woodpecker tapping on the surface of a wooden pole; but this one was looking for a meal in such a systematic way that one was tempted to think it must have been a regular habit.

M. Mowat

A surprise present

In January 1983 I was given two mangoes. When I split open the stone of the first I found a white wriggly creature inside. It was the pupa of the mango weevil, *Cryptorhynchus*. The second mango stone contained a dead adult beetle, dark brown in colour, which Dr Shaw of the Royal Scottish Museum identified as either *Cryptorhynchus gravis* (Fabricius) or *Cryptorhynchus mangiferae* (Fabricius). The skin and flesh of both fruit appeared completely unblemished. It would be interesting to know how typical these fruits were. It may be that this weevil does occur in the stone of mangoes quite frequently. Presumably most mango eaters do not split open the stone afterwards.

H. Thom

EXCURSIONS 1983

Key for excursions:

<i>B</i> - botany	<i>F</i> - fungi	<i>AgEx</i> - agricultural experiments
<i>O</i> - ornithology	<i>S</i> - spiders	<i>Ge</i> - geology
<i>G</i> - general	<i>T</i> - trees	<i>ML</i> - mosses and liverworts
<i>E</i> - entomology		

Day Excursions and Weekends

5 Feb	Visit to Royal Scottish Museum		
12 Mar	Hopetoun Estate, South Queensferry	<i>G</i>	Mr C. Rawcliffe
30 Apr	Dalmeny	<i>T</i>	Mrs B. Smith
7 May	Almondell	<i>G</i>	Mrs S. Gray
14 May	Bush Estate	<i>G</i>	Mr W.D. Gill
20- 24 May	Arran Weekend	<i>G</i>	Miss B. Gordon Mrs M. Robertson
28 May	Eden Estuary	<i>O</i>	Dr I. Strachan
4 Jun	Bass Rock with S.O.C.	<i>O</i>	Mr A. Brown
5 Jun	Lamb and Fidra with S.O.C.	<i>O</i>	Mr A. Brown
11 Jun	Craigleith Island with S.O.C.	<i>O</i>	Mr A. Brown
11 Jun	Muiravonside Country Park	<i>G</i>	Mr G. McDougall
18 Jun	Tynninghame	<i>O</i>	Mr A. Clunas
25 Jun	Aberlady	<i>G</i>	Mrs M. Robertson
2 Jul	Edgelaw Reservoir	<i>G</i>	Mr B. Baird
9 Jul	Loch of Lowes and Campsie Linn with Perthshire Society of Natural Science	<i>OB</i>	Miss R. Fothergill
16 Jul	Lochwinnoch	<i>B</i>	Dr R. Begg
23 Jul	Haddington Circuit	<i>B</i>	Mr J. Carlyle
30 Jul	Pressmennan	<i>B</i>	Miss J. Raeburn

6 Aug	Yellowcraig	<i>E</i>	Dr A. Sommerville
13 Aug	Melrose and Eildons	<i>G</i>	Mrs V. McFarland
20 Aug	Peebles Circuit	<i>G</i>	Mr G. Bell Mr A. Dickson
27 Aug	Cardrona Forest Walk	<i>G</i>	Miss B. Gordon
3 Sep	Carlops Circuit	<i>G</i>	Miss F. Howie
10 Sep	Kingsbarns to Crail with Dundee Naturalists	<i>G</i>	Mr J. Cook
17- 19 Sep	Oban Weekend	<i>G</i>	Miss O'Donnell Miss Gordon
24 Sep	Lammermuir Circular Walk	<i>G</i>	Mrs M. Wood
1 Oct	Yellowcraig to Aberlady	<i>O</i>	Mr B. Clunie
8 Oct	Vogrie Country Park	<i>F</i>	Dr P. Mason
19 Oct	Musselburgh Lagoons and Kilspindie	<i>O</i>	Mr C. Pountain
26 Dec	Sausage Sizzle and Coast Walk	<i>G</i>	

Evening Excursions

4 May	Princes St Gardens	<i>ML</i>	Miss H. McHaffie
11 May	Cramond Island	<i>O</i>	Mr C. Rawcliffe
18 May	Roslin	<i>OB</i>	Mrs E. Hamilton
25 May	Cramond Circuit	<i>G</i>	Miss C. Crawford
1 Jun	Colinton to Juniper Green	<i>B*</i>	Mrs P. Bell
8 Jun	Holyrood Park	<i>O</i>	Mr G. Carse
15 Jun	Bawsinch	<i>O</i>	Mrs E. Hamilton
22 Jun	Canonmills to Leith	<i>G</i>	Mr C. Rawcliffe
29 Jun	Kirkliston	<i>B</i>	Mr J. Carlyle
6 Jul	Mortonhall to Buckstone	<i>G</i>	Mrs. J. Robinson
13 Jul	Boghall Farm	<i>AgEx</i>	Mr W.D. Gill
20 Jul	Bavelaw Marsh	<i>S</i>	Mr J. Stewart
27 Jul	Penicuik Estates		Miss S. Morgan Jones
3 Aug	Blackford Pond Circuit	<i>O</i>	Miss M. Mowat

*cancelled

REPORTS AND EXTRACTS FROM REPORTS

Full lists of animals and plants seen on outings and excursions are not included in the reports but are lodged with the Records Secretary.

Visit to the Royal Scottish Museum - 5th February, 1983

During the first part of the visit we were taken behind the scenes and shown how taxidermists prepare animals for display. This demonstration included the recently introduced method of freeze-drying, in which the whole animal, guts and all, is freeze-dried in the display position. We were also shown the vast collections of birds and birds' eggs which are used for research purposes.

The second part of the visit took the form of a talk illustrated by slides on some of the men who went on expeditions to collect specimens for the museum. Many of the actual specimens collected by them were on display.

We were grateful to Mr Bunyan and Mr Lister of the Museum for arranging such an interesting morning for us and showing us so much.

E. Gillespie

Outing to Dalmeny - 30th April, 1983

Trees at Dalmeny:

At the outset the importance of trees was explained. Trees, being the climax vegetation of this area, formerly covered most of the land. Where woodlands exist, the trees affect the climate within the wood, reducing the effect of wind and sunshine and also maintaining humidity and a less variable temperature. The shade cast by the leafy canopy affects the plant species that can grow in woodlands. In addition, being such vast structures, trees, in all their parts are a source of food exploited mainly by insects which in turn are eaten by birds. Different fungi are associated with trees, not only as parasites or as saprophytes (fungi living on dead trees), but also as partners with the trees in a mycorrhizal association on the tree roots. There is therefore a community of plants and animals geared to live in woodlands.

A conspicuous fungus, the Jew's Ear fungus (*Auricularia auricula*) was seen on its usual host, Elder. Masses of it were, however, also found on fallen Sycamore, beside which were several thriving clumps of *Daphne laureola*, an introduced shrub.

In trying to unravel the relationship between species in a wood it is a great help if one can learn to recognise trees. In winter or early spring the twigs provide the clues to identify them, and binoculars are a help when branches are out of reach. Some of the clues we found useful were:

Black buds	Ash
Red buds and zig-zag stem	Lime
Both round buds and pointed buds	Elm
Green buds arranged in pairs opposite one another, with each pair at right angles to its neighbour	Sycamore
Clusters of light brown buds at the tip of twigs	Oak
Long brown sticky buds arranged like Sycamore	Horse-chestnut

Comment about the horse-shoe shaped leaf scars on the Horse-chestnut twig led to a closer examination of twigs. When the bud opens, the bud scales fall off leaving a series of small scars collectively known as a girdle or ring scar. The growing bud which is really a condensed shoot then expands forming an extension of the twig. The distance between two successive ring scars is the amount of growth of that twig in a particular year. It was seen that some tree and shrub species are much faster growers than others and also that some years were better growing years than others. The age of particular twigs was found by counting their ring scars.

Identification of closely related species presents difficulties but a good textbook will provide helpful clues. The commonest Elm hereabouts is Wych Elm (*Ulmus glabra*). It never has suckers (but often has burrs on its trunk). An Elm surrounded by suckers was spotted. It must have been English Elm (*Ulmus procera*). Pines have needle-shaped leaves in clusters of 2, 3 or 5. The Scots Pine - a two-needled Pine - always has an orange top to its trunk. While examining another species of pine, the consensus being it was Corsican Pine (*Pinus nigra* [black] var. *maritima*), one member found a ladybird on its bark. It was the Eyed or Ocelated Ladybird (*Anatis ocellate*) identified by the pale rings encircling each of its black spots. There are several species of ladybirds, each having a different ecology. The Eyed Ladybird is associated with conifers and must feed on a different species of aphid from that which infects, say, Sycamore.

Distinguishing Silver Birch (*Betula pendula*) from Hairy or Downy Birch (*Betula pubescens*) sent us all back to the textbooks. A leaf was found to have a set of teeth, a characteristic confirming our preliminary diagnosis of Silver Birch based on the large areas of white on the trunk. A Holly (*Ilex aquifolia*) without prickles on its leaves posed problems, but even the prickliest of hollies often have some leaves with few or no prickles. A magnificent specimen of an introduced species, Turkey Oak (*Quercus cerris*) was admired. Its twigs have an untidy wispy appearance due to long narrow stipules and its fallen acorn-cups were seen to be shaggy.

Dog's Mercury (*Mercurialis perennis*) a common woodland plant occurred in extensive patches. All the flowers examined were male. In other words, they had stamens which produce pollen but they had no ovaries. Like so many of the woodland flowers, Dog's Mercury has to grow and flower early in the spring before the leaves come out on the trees and shade out the light. Pollinating insects are not plentiful in early spring and the woodland plants in general do not rely solely on pollination and subsequent seed dispersal to propagate. Each, in its own way, such as

sending out underground stems, reproduces vegetatively, making more of the same sort round about the original plant. In this way, the dense stands typical of woodland flowers are built up.

In an area of parkland two Green Woodpeckers were heard yaffling against each other. Nearby, on the grazed pasture, grassy mounds suggested the presence of Yellow Ants (*Lasius flavus*). Sure enough, there they were just beneath the soil surface, tending the larvae. Yellow Ants are one of the food items of the Green Woodpecker.

The co-operation of the company in making their observations known and in sharing their knowledge was greatly appreciated.

E.M. Smith

Outing to Princes Street Gardens - 4th May, 1983

From the Floral Clock the route took us over the first railway bridge, up the path beneath the castle, round beneath St Margaret's Well house, across the western railway bridge and back through the gardens to the Floral Clock.

The outing was planned as a moss study and it was interesting to see how many mosses were to be found in the centre of Edinburgh.

They included:

- | | | |
|---------------|---|---|
| In grass | - | <i>Brachythecium rutabulum</i> |
| On walls | - | <i>Barbula recurvirostra</i> , <i>Bryum argenteum</i> ,
<i>Bryum capillare</i> , <i>Orthotrichum diaphanum</i> |
| On rocks | - | <i>Amblystegium serpens</i> , <i>Brachythecium rutabulum</i> ,
<i>Dicranella varia</i> , <i>Funaria hygrometrica</i> |
| Edge of paths | - | <i>Bryum argenteum</i> , <i>Funaria hygrometrica</i> |

H. McHaffie

Outing to Almondell/Calderwood Country Park - 7th May, 1983

On Saturday, 7th May the members braved the haar and overhead drizzle to assemble at the East Calder entrance to the Almondell Country Park. Having been joined by our two leaders - the resident rangers for the Park - Mary Konik and Andrew Laxton - we drove through East Calder to Mid Calder where is the Calderwood entrance to the Park.

Calderwood is on a plateau of land bounded by the Linnhouse Water and the Murieston River. The walk commenced at the junction of the two rivers and followed the Muireston Water upstream. As April 1983 had been the wettest on record for many years, the paths were pure mud and we slithered our way along noting many plants, in particular the Wood Anemone (*Anemone nemorosa*) which was very abundant. Our leader explained that the bulk of the trees in Calderwood had been cut down in the early 1900's, leaving behind plants of woodland habitat. By the riverside, underneath

a Scots Pine, a great many cones, stripped to the core, were found giving evidence of Squirrels (almost certainly Grey Squirrels in this area). On an Oak tree the Ranger pointed out a Pea Gall on a leaf, an Artichoke Gall on an oak bud and Oak Marble Galls.

Climbing up a steep path away from the river, the plateau was reached and some way further on a Badger set. We searched and a Badger hair was found so, although the front entrance had fallen in a little, this discovery proved a Badger was at least 'calling by'! Old shale bings were in view; shale expands on being brought to the surface, so the mounds are larger than the holes from which it is taken.

Crossing the plateau a large shallow pond was reached, possibly created by the subsidence of underground workings from old shale mines and a short distance further on a second much deeper pond, thought perhaps to be over a disused mine shaft.

Back at the Bridge at Mid Calder, we passed underneath and returned to the car park.

M. Konik

Outing to the Bush Estate - 14th May, 1983

After an introductory talk on the function and composition of the Edinburgh Centre of Rural Economy which is situated at Bush Estate, the morning was spent walking round the parkland and woodland of Bush policies. The party was accompanied by Dr John Blyth of the University Department of Forestry and Natural Resources. Dr Blyth described some aspects of the management of such mature woodland and referred to the possible future development of coppicing. Natural regeneration of this woodland appeared to be confined to Ash, Sycamore and Birch.

After lunch the party crossed Glencorse Burn and walked round part of Glencorse Mains farm, using shelter belts as pathways. Some areas have been recently felled and replanted. Many Beech seedlings were seen just emerging but it was felt that they had little chance of surviving due to grazing by rabbits and deer.

The late spring meant that trees were only just coming into leaf - individual trees within a species showing considerable variation in their stage of emergence. Recent wet weather had left much surface water standing in the fields. Spring barley fields were just brairding.

D. Gill

Outing to Roslin Glen - 18th May, 1983

This evening outing was planned as an ornithological and botanical outing. Weather precluded much bird study whether by sight or song but this glen is one of the richest areas, if not the richest, for the variety of its bird species in the district. Wood Warbler, Blackcap, Garden Warbler, Spotted and Pied Flycatcher, Chiffchaff as well as Willow Warbler, Green and Great Spotted Woodpecker can be seen and heard here most

years in appropriate weather conditions. Tree Creeper, four species of tit, Chaffinch, Greenfinch, Goldfinch, Robin, Dunnock, Blackbird, Song and Mistle Thrush, Goldcrest are some of the resident species present.

Many woodland herbaceous plants were seen in flower. They included:

Ajuga reptans (Bugle), *Anemone nemorosa* (Wood Anemone), *Caltha palustris* (Marsh Marigold), *Endymion non-scriptus* (Bluebell), *Galium odoratum* (Woodruff), *Lathraea squamaria* (Toothwort) under Holly, *Luzula sylvatica* (Great Woodrush), *Oxalis acetosella* (Wood-sorrel), *Ranunculus auricomus* (Goldlocks), *Saxifraga granulata* (Meadow Saxifrage), *Vinca minor* (Lesser Periwinkle).

Noted in leaf were:

Aconitum anglicum (Monkshood) and *Polygonum bistorta* (Common Bistort), and stems of *Equisetum hyemale*, a Horsetail known as Dutch Rush, were showing.

E. Hamilton

Arran Weekend - 20th - 24th May, 1983

After one of the wettest springs that most of us can remember, it was a relief to arrive in Arran on Friday, 20th May for a weekend of dry, though still rather chilly, weather.

Saturday, 21st May

We drove along the coast road from Whiting Bay to Blackwaterfoot. Foliage on the trees was well ahead of the east coast of Scotland and the roadside verges were carpeted with Primroses, Wild Hyacinths, Campions and Violets with a background of Bracken just starting to unroll its leaves. Hawthorn was in bud and in a few places in flower, and birds were singing everywhere, but a Corncrake which had tormented us with its calling the previous evening in a field just south of Whiting Bay was now silent.

Cars were parked by the Golf Course at Blackwaterfoot and the morning was spent following the coastline, initially with the golf course beside us. As with so many golf courses, this one is ideally situated on a raised beach which runs from Blackwaterfoot to Drumadoon Point. From the end of the golf course to our lunch stop at King's Cave, the path lay between the shore and a long high sill of quartz-felspar-porphyry. The steep slope to the foreshore was covered in a scrubby tree growth of Blackthorn, Hawthorn, Alder and Willow. From the scrub came the singing of Willow Warbler, Wren and Chaffinch. On the seaward side Gannets from Ailsa Craig were diving, Shelduck were close inshore, and several Black Guillemots were seen.

King's Cave, named after Robert the Bruce, is in New Red Sandstone which has been eroded away by the sea at the 25 foot beach level. Within the cave a figure carrying a bow above his head has been carved on a pillar. Rock-doves are said to nest in the area. This coastline from Blackwaterfoot has been popular with visiting geologists ever since Hutton came to Arran at the end of the 18th century.

The path from King's Cave led up onto open moorland, part of which is a young conifer plantation, then down once more to the coastline. At this point the majority turned inland to visit the ancient monuments on Machrie Moor. Not so for some of our botanists who were deep in conversation and oblivious to all except flowers. They continued on but were rescued at the end of the day, well exercised but with no time left to see the Bronze Age stone circles and standing stones. An excellent description of these is given in MacKie's Archaeological Guide. Briefly, there are granite circles, cist graves and tall, red sandstone slabs, the last being particularly impressive, the sunshine accentuating their colour and size. The site has not yet been fully excavated, and much still lies under a blanket of peat.

At the end of the day some returned to Whiting Bay by the coastal road and others took the road by Sliddery Water and Monamore to Lamlash, this and the String Road being the only ones to cut across the width of Arran.

E. Farquharson

Sunday, 22nd May

The Gannets were fishing in Whiting Bay as we set off north toward Gleann Easan Biorach. Just beyond the village of Corrie, several Atlantic Grey Seals were basking on the rocks, and a little further on up the road near North Glen Sannox Red Deer were grazing by the roadside.

The hardier members of the party started their walk from North Glen Sannox, intending to join up with the others at Loch na Davie, at the end of Gleann Easan Biorach. They were rewarded with a very close sighting of a pair of Red-throated Divers on one of the lochans. However, the rest of the group meanwhile drove on to Gleann Easan Biorach and walked up towards Loch na Davie. The first incline afforded a very fine view of Lochranza and high above the crags two large raptors were observed (too distant for members to positively identify, but later in the weekend the Brodick Country Park Ranger acknowledged that they were likely to have been one of the two known breeding pairs of Golden Eagle on the island). Grey Wagtail, Peregrine and Meadow Pipits were also seen. This area was perhaps rather disappointing for botanists - Lousewort (*Pedicularis sylvatica*), Marsh Violet (*Viola palustris*) and Milkwort sp. (*Polygala* sp.) being the few flowers seen. However, for those climbing higher up the side of the glen, there were very close views of Red Deer - on one side a head of 65 and on the other a herd numbering about 35 watched a couple of members pass within 100 yards without much concern.

J. Robinson

Monday, 23rd May - A Day at Brodick Castle

The morning was spent walking round the Country Park guided by the Ranger, Mr D.W. Warner and his assistant. Mr Warner led his group through Merkland Wood to see the Heronry and across some of the moorland, while the second group walked through the Rhododendron woods surrounding the Castle.

There are many fine specimens of introduced trees, including Wellingtonia (*Sequoiadendron giganteum*), Chile Pine or Monkey-Puzzle

(*Araucaria araucana*) and *Eucalyptus* sp., while the Azaleas were at their best.

Control of *Rhododendron ponticum* was explained as it is very invasive, excluding natural plants and of no benefit to woodland birds.

We saw and heard many small birds, including Bullfinch, Greenfinch, Chiffchaff, Willow Warbler and Whitethroat and the rarer Wood Warbler which sings on and on, in the natural oak-beech woodland.

There were many ferns, mosses and lichens in the undergrowth and Polypody growing on oak beside the Lochan Burn, previously used to power the sawmill. We also saw a Red Squirrel high in the oaks: there are no Greys on the island.

The afternoon was spent in various ways, visiting the Castle itself, the formal walled garden the walls of which were pink with Fairy Foxglove (*Erinus alpinus*) in flower, walking through the Azaleas and the policy woodland or the country park.

We are grateful to the two Rangers who guided us, and gave us a very enjoyable day.

M. Robertson

Observations from Arran

Slow Worm (*Anguis fragilis*) - On 22nd May, while some of the other members were hill-walking, four of us decided to explore Glen Catacol, near Lochranza. Although the glen was not very rich in wildlife, this walk did produce one surprise in the shape of a very large Slow Worm (*Anguis fragilis*) which was basking in the sun beside the path. It disappeared under a stone, but we waited quietly, and it re-emerged, giving a splendid opportunity for photography.

The Slow Worm, a legless lizard often mistaken for a snake, is found throughout Britain, but is commoner in the south. This one was a dark greyish colour, whereas some illustrations in the text-books show it as pale fawn or brown.

M. Mowat

Hemlock Water Dropwort (*Oenanthe crocata*) grows everywhere in streams and damp hedges and dykes; conditions on Arran seem to suit this plant very well. It is a very poisonous perennial plant, particularly dangerous if the roots are left exposed when uprooted, but cattle and sheep seem to know to avoid eating it.

M. Robertson

Plants seen on Tuesday, 24th May

These included,

At Kildonan:	Purple Loosestrife	<i>Lythrum salicaria</i>
	Wild Cabbage	<i>Brassica oleracea</i>
	Gipsywort	<i>Lycopus europaeus</i>
	Alexanders	<i>Smyenium olusatrum</i>
At Lagg:	Oyster-plant	<i>Mertensia maritima</i>
	Tansy	<i>Tanacetum vulgare</i>

R. Hunter

Outing to the Eden Estuary - 28th May, 1983

Twenty-six of us left Edinburgh by coach for the Eden Estuary on an Ornithological Outing.

We met our guide for the day, Dr Ian Strachan, of the North-east Fife Ranger Service, at Guardbridge where we left the coach for a short walk down the road and through the stable yard to the salt marsh.

Dr Strachan told us that there were Common and Arctic Terns nesting nearby and one or two heads could be seen, though the first birds to catch our eyes were a group of Wigeon. Roseate and Sandwich Terns also used to nest there but have now disappeared, probably due to the proximity of Leuchars Air Force Base on the other side of the estuary.

The most frequent wader in the area is the Oystercatcher and the bay is most famous for its numbers of Black-tailed Godwit.

A few hundred yards along the south side of the marsh we saw Shelduck. These birds breed on the north side of the estuary and feed on small snails (*Hydrobia*) which they sift from the sand with special filters in their bills. We were able to see these filters later when we came across a dead bird.

Further out into the estuary, we saw Cormorant and Eider and Heron which in this area feed on flounders. We were told that there is a heronry on the other side of the airfield and this year many of the Heron chicks died due to the cold wet spring.

Rounding a point we saw erosion of previously reclaimed land caused by the January gales.

We had our lunch in the lee of the sea wall where a Whimbrel was heard. Our walk then took us along the top of the sea wall and back on to the sand again heading for Out Head, where we saw hundreds of tiny holes in the sand which were the burrows of the tiny Brackish Water Shrimp (*Corophium volutator*) which is the food of the Redshank.

Among the plants seen were Marsh Marigold (*Caltha palustris*), Field mouse-ear (*Cerastium arvense*), Cord-grass (*Spartina x townsendii*), Lyme-grass (*Elymus arenarius*), Tree Lupin (*Lupinus arboreus*), Early Forget-me-

not (*Myosotis ramosissima*), Hemlock Water Dropwort (*Oenanthe crocata*), Celery-leaved Buttercup (*Ranunculus sceleratus*), Tuberous Comfrey (*Symphytum tuberosum*), Spring Vetch (*Vicia lathyroides*), Eelgrass (*Zostera* spp.).

We found the coach waiting for us a short distance away near St Andrews, where we embarked for our return journey after a very cold but pleasant outing.

B. Gill

Some notes from Dr Ian Strachan on Spartina (Cord-grass) and Zostera (Eelgrass) at the Eden Estuary

The *Spartina* at the Eden Estuary is *S. townsendia* and was introduced there in the 40's by the Professor of Botany at St Andrews University. There was some hope that it would prevent erosion of the golf links. The University has monitored its spread in the past, and it has spread rather slowly, apparently not producing fertile seed. I personally would like to see it controlled, as it is invading the existing *Puccinellia* (Saltmarsh-grass) saltmarsh, Eelgrass beds (*Zostera noltii* and *Z. angustifolia*), and mudflats which are important feeding grounds for waders. *Spartina maritima* is not present in the estuary.

Two species of Eelgrass occur in the estuary - Dwarf Eelgrass (*Z. noltii*) and Narrow-leaved Eelgrass (*Z. angustifolia*). Both are rather locally distributed, the former on mudflats and the latter in shallow drainage channels. In his book, 'Nature Study Rambles Round St Andrews' (1910), Wilson states that Eelgrass covered vast areas of the estuary, so it would appear to have declined since then. Eelgrass is the favourite food of several wildfowl species, especially Wigeon, Mute Swans and Brent Geese (only a scarce visitor to the Eden) but I do not know if it is a significant food source here - I hope a student will investigate the question next year.

A student in the Botany Department is investigating reproduction of the two species of *Zostera* - they do produce seeds but I do not know whether these are fertile - I suspect reproduction is mainly vegetative.

I. Strachan

Outing to Bawsinch - 15th June, 1983

Bawsinch is a reserve belonging to the Scottish Wildlife Trust which has been made from derelict land bordering Duddingston Loch. Trees and bushes, all native species, grow in grassland where native flowering plants have been planted (grown from seed). As well, a series of freshwater ponds have been dug to provide habitats for aquatic flora and fauna, now becoming scarcer due to diminution of just such fresh water habitats in the Lothians.

Mr Colin Mclean, the Reserve Convener, sent his apologies for not being there to welcome us. But we were pleased that Mr Jack Ridley, Warden of the Reserve, was able to show us round, along with Elspeth Hamilton, one of our members.

Of particular interest that evening was the calling of a Lesser White-throat from the tall hedges at the south-east of the Reserve. Members listened to the disyllabic metallic chuckle for several minutes before a short period of Whitethroat subsong gave the clue to the possible identity of the unknown songster. Several members stayed behind to listen further. Later our identification was confirmed by an R.S.P.B. member who had recently seen and heard a Lesser Whitethroat on the Reserve.

A special interest was the information which Mr Ridley gave us on the proposed site of the pond to be made as a memorial to the late Mr P. Gunn. It was hard to imagine that the straggly patch of waste ground pointed out to us would eventually be transformed to make a habitat for waterfowl. It is planned to have banks suitably planted and grown to provide nesting cover for Little Grebes, Moorhens and other waterside birds.

The sunshine held and the evening was still. After seeing the goose-green where the geese from Duddingston Loch bring their goslings to feed, members then wandered off to see more of the trees and birds before returning to the wicket gate to go home.

E. Hamilton

Outing to Tynninghame - 18th June, 1983

The Ranger of the John Muir Country Park, Alister Clunas, had obtained permission for our party to walk through some of the private grounds of Tynninghame House, and was thus able to lead us on a circular tour and over more varied habitat than would have been the case had we kept to the public paths. Warm sunshine and a light breeze brought out many butterflies, mostly the 'Whites' - Large, Small and Green-veined, but also many Small Heaths, and, to the pleasure of the Ranger, a male Orange-tip, a first record for the Park. Our walk towards the estuary of the Tyne was mostly along woodland rides between mixed hardwoods and conifer plantations, with typical woodland and hedgerow flora and birdlife. The shallow estuary brought a complete change of scene, where we saw Mute Swan, and Shelduck and five or six Herons from a nearby heronry. From here we walked northwards along the shore and over the saltmarshes of Tynninghame Bay identifying many of the characteristic plants of such areas. Several unfamiliar ones were common here, such as Henbane (*Hyoscyamus niger*), Hound's-tongue (*Cynoglossum officinale*), Sea Wormwood (*Artemisia maritima*) and Hemlock Water-dropwort (*Oenanthe crocata*). During our lunch time, we watched Little Terns and Gannets diving for fish.

When we left the shore near St Baldred's Cradle, Mr Clunas led us past a fine display of Bloody Cranesbill (*Geranium sanguineum*), and on to an area of dune-heath where on acid soil are many plants normally associated with upland habitats - Heather (*Calluna vulgaris*), Crowberry (*Empetrum nigrum*), Tormentil (*Potentilla erecta*), Heath Bedstraw (*Galium saxatile*), Heath Milkwort (*Polygala serpyllifolia*). An Adder's-tongue Fern (*Ophioglossum vulgatum*) was another rarity for many of us.

The return to the car park was through private lanes in the estate, on one of which a wandering hedgehog was the centre of attention!

M. Watson

Outing to Aberlady - 25th June, 1983

On Saturday, 25th June, twenty members of the E.N.H.S. met at the Timber Bridge, Aberlady Bay and were received by the Warden of the Reserve, Peter Gordon, who conducted us across the salt marsh and round the Marl Loch. The chief interest was botanical with Northern Marsh Orchid (*Dactylorhiza purpurella*) and Early Marsh Orchid (*Dactylorhiza incarnata*) outstanding.

Mr Gordon explained the work of wardening the Tern colony in the breeding season and we saw the nesting Arctic, Common and Little Terns in the roped-off area. We found a freshly killed Arctic Tern 'chopped' by a fox, the chief predator.

There were few birds on the sea but we noted female Eider with young and the males gathering as they begin to moult. Some were already in eclipse.

We returned by the estuary as the in-coming tide pushed the birds inland, and saw a flock of 400 Knot, about 100 Bar-tailed Godwit, a few Dunlin and Ringed Plover, some with young.

The salt marsh was pink with Thrift (*Armeria maritima*) in bloom and the Greater Sea-spurrey (*Spergularia media*) was very attractive also.

M. Robertson

Outing to Edgelaw Reservoir - 2nd July, 1983

Mr B. Baird led our group on the outing. He gave us an outline of the reservoir: it was built in the 1870's as a 'compensation' reservoir. The ground was fairly acid and because of this a lot of 'treatment' was required before it could be used. It was first used as a public water supply in 1959 and it belongs to the Lothian Region Water Board.

En route to it we passed a large number of Horsetails. Mr Baird told us that these plants have an ancient and interesting history. In fact they were identified as far back as the Devonian Period. Their rhizomes are still unchanged. The plants' height vary, depending on the habitat, and in Mexico and South America can grow up to 20 feet. They have a practical value too, in that tea can be infused from them.

After reaching the reservoir we traversed a marshy area which was very rich in plant life. This area would also be of interest to a grass specialist and an entomologist. Continuing on we walked through an area of woodland containing Beech, Scots Pine, Silver Birch and Goat Willow trees. Emerging from the woodland we walked alongside and above the level of the water. Again the grassland supported a wide variety of plants. At the end of the reservoir we dropped down some height where below some large out-crop of rock we were shown and observed fossils - fossils of the *Lepidodendron* variety. By this time we were ready for our lunch! Following this we proceeded through the thickly wooded area with a predominance of evergreen trees. Mr Baird hoped that we would have a sighting of the Herons that he had observed on a previous visit, but it seems that they must have abandoned the old nest sites. In spite of this disappointment, we had a most interesting and enjoyable day.

A. McCafferty

The list of birds seen during the Edgelaw Reservoir visit and sent to the Records Secretary was disappointing.

Indeed, what was not seen was more of interest. On this beautiful sunny day there was no bird on the water. No Coot or Duck - a Goldcrest was heard but remained unseen. Even the heronry on the south side appears to have disappeared without trace since last year. The winter gales may have blown away the nests, but our keen-eyed party spotted a Heron's mudprint on the edge of the water. Mr Baird, our leader, told us that a Woodpecker was said to be nesting there and he had heard it tapping ... but not this day.

K.W. Sanderson

Evening Walk from Buckstone to Gallachlaw - 6th July, 1983

The party, 18 in number, followed the path along the side of Buckstone housing estate (Mortonhall Golf Club driveway) and then around Gallachlaw. Permission had been sought for access to Mortonhall Estate, with the intention of circling via the Arboretum on the estate. Unfortunately, however, the outing had to be re-routed owing to the fact that the Department of Agriculture, who rent some of the fields from the owners, had recently installed a bull therein!

Up the Mortonhall Golf Club driveway the vegetation is mostly Beech together with extensive plantings of Rhododendrons. On Gallachlaw there is mixed woodland including trees of Scots Pine, Oak, Beech, despite the encroachment of Miller's houses. There is uncultivated grassland on top of Gallachlaw and arable land on the Mortonhall Estate.

Though naught of particular interest in the way of bird or plant life was seen, several types of fungi were found on Gallachlaw.

Some background local history was imparted en route, covering the origins of the names 'Buckstane', Mortonhall and Gallachlaw.

It will be interesting to monitor the effect of the continuing encroachment of the Miller housing development.

J. Robinson

Outing to the Loch of the Lowes and Campsie Linn - 9th July, 1983

A party of 35 members travelled by coach first for a quick visit to the Loch of the Lowes where we were met by Miss Rhona Fothergill, Secretary of the Perthshire Society of Natural Science, and then on to Campsie Farm, about 16 miles from Perth. Here we were joined by Dr Rosalind Smith of the Nature Conservancy Council. Miss Fothergill and Dr Smith were to be our leaders for the afternoon.

We were led from the farm to follow a steep path through mixed woodland down to the east bank of the River Tay. We then followed a rocky path south westward along the river bank to Campsie Linn rapids.

The vegetation we passed through was typical of a well-established woodland. The herbaceous plants included Wood Sanicle (*Sanicula europaea*), Giant Bellflower (*Campanula latifolia*), a very late flowering Moschatel (*Adoxa moschatellina*) and both Wood Sorrel (*Oxalis acetosella*) and Dog's Mercury (*Mercurialis perennis*) in leaf. Orpine (*Sedum telephium*) was seen in flower amongst the rocks. Plants flowering in small open gaps between the trees included Astartia (*Astrantia major*) - a naturalised plant - Lesser Meadow-rue (*Thalictrum minus*) and Hairy St John's Wort (*Hypericum hirsutum*). Honeysuckle (*Lonicera periclymenum*) scrambled up many of the trees. Amongst the plants in the wetter places were Northern Bedstraw (*Galium boreale*) and Meadow-sweet (*Filipendula ulmaria*) and in the shallow water there were stands of Bottle Sedge (*Carex rostrata*) and Reed Grass (*Phalaris arundinaceae*).

Eight ferns were recorded during the afternoon. In the wood we saw Lady-fern (*Athyrium filix-femina*), Hard Fern (*Blechnum spicant*), Brittle Bladder-fern (*Cystopteris fragilis*), Broad Buckler-fern (*Dryopteris austriaca*), Male-fern (*Dryopteris filix-mas*), Polypody (*Polypodium vulgare*), and Hard Shield-fern (*Polystichum aculeatum*). Wall-rue (*Asplenium rutamuraria*) was seen later on a wall near the Castle.

We reversed our direction to visit Stobhall Castle, set on a ridge high above the Tay. We entered its grounds, well laid out with interesting herbaceous plants and trees, through an arched passage and followed a track towards a courtyard surrounded by an irregular wall. Here we saw a loose group of unconnected buildings placed attractively at odd levels and angles, very well adapted to the site.

The small Chapel and attached dwelling house bearing the date 1578 (the Chapel was probably at one time a hall) form the largest building. We went into the Chapel to see, especially, the original tempera ceiling of equestrian figures painted in the seventeenth century.

Although the buildings in the courtyard were dated 1578, they must have been built on the foundations of an earlier structure as Stobhall came into the hands of the Drummond family in 1360. They lived in it until a descendant of the founder was created the first Lord Drummond sometime in the fifteenth century and built Drummond Castle near Crieff for the family home.

Over the years, Stobhall Castle has gone through many vicissitudes and structural changes and some years ago the buildings were adjusted to make a modern residence. It has become once again the home of the Earl of Perth, the Head of the Drummond family.

Our thanks are due to Dr Smith and Miss Fothergill for giving us such an interesting and happy afternoon.

J.K. Raeburn

Visit to Boghall - East of Scotland College of Agriculture - 13th July, 1983

The purpose of the visit was to see some agricultural field experiments.

Duncan Gill conducted the group round Lower Fulford field where they saw field trials and demonstration plots of winter and spring Barley, winter Wheat and spring Oats. Topics included variety comparisons, sowing dates, manuring methods, fungicidal disease control and the use of growth regulators. Cereal diseases seen were mildew (*Erysiphe graminis*), *Rhynchosporium* and loose smut (*Ustilago nuda*) - all on Barley.

Mr M.W. Morrison then led the party to Cow Loan field and explained the work conducted there on assessing the merits of new varieties of grasses and clover. Rye grass varieties were the most numerous along with Cocksfoot, Timothy and Red and White clovers.

Management methods were illustrated whereby varieties were measured under both conservation and simulated grazing regimes.

W.D. Gill

Outing to Lochwinnoch, Castle Semple and Parkhill Wood - 16th July, 1983

The weather was fine and warm for this outing, in which 31 members of the Society participated. Castle Semple Loch is one of a complex of parks controlled by Strathclyde Regional Council, which extend over a vast area of moorland and include a glen running eastwards from the main coastal road A78, and coastland at Lunderston Bay. Our walk began at the village of Lochwinnoch, at the Visitor Centre, where a short talk was given by Mr Len Howcott, one of the Rangers. Castle Semple itself was burned down in 1924 and the estate remained in a state of neglect thereafter, until acquired by Strathclyde Council. As far as possible, it is to be kept in its natural state although improved access for visitors is planned.

We followed the shore of the Loch on its westward side as far as a small bay with marshland adjoining; here there were Purple Loosestrife (*Lythrum salicaris*), Yellow Loosestrife (*Lysimachia vulgaris*) and Skullcap (*Scutellaria galericulata*); also Marsh Ragwort (*Senecio aquaticus*) and Marsh Yellow-cress (*Rorippa islandica*) - a rare plant in the north. We were then led up the Black Ditch into Parkhill Wood, taking our lunch in a sunny meadow overlooking the Loch. After that, we walked on to see the ruined Collegiate Church dating from 1504 where monks once lived on an upper floor getting water and perhaps fish from a nearby pond. There were family tombs inside. Not far off there is an icehouse with the ground hollowed out in a cone shape inside.

The middle of Parkhill Wood contains a low lying undrained area of wetland which was too overgrown with willows, scrub and rushes to examine. Greater Tussock Sedge (*Carex paniculata*) grows here and, though rather difficult of access, was found with the aid of the Ranger. Along the adjoining path was Trailing Tormenitil (*Potentilla anglica*) - an uncommon find. *Amanita crocea*, a rather unusual fungus associated with birch, turned up further on.

Leaving the wood, we returned along the disused railway line where grows Pale Toadflax (*Linaria repens*), and before reboarding the coach we were able to watch the antics of numbers of wind surfers enjoying the facilities of the Recreation Centre.

R. Begg

Outing to Bavelaw Marsh for Spider Study - 20th July, 1983

During a short walk from the car park to the south side of Bavelaw Marsh, some methods of collecting spiders were demonstrated to the 20 members who attended. The use of sweep net, beating tray, plastic ground sheet and even members' bare hands, produced specimens of a few different families although not in any great numbers.

However, with the aid of a hand lens it was possible to see some of the basic differences in structure, like leg length, body shape and arrangement of eyes between wolf spiders, crab spiders, orb web weavers and the Linyphiidae or 'money spiders'.

Mature male and female specimens of *Tetragnatha extensa* were 'introduced' to each other, which led to rather rapid mating during which a demonstration of the use of the male's characteristically large chelicerae to wedge open the female's fangs, was readily seen.

In the tall grasses along the road verge the domed sheet web of *Linyphia triangularis* was fairly common, and was seen to be provided with a superstructure of apparently random scaffolding threads to aid the capture of prey species. The only other trap noted was the orb web of *Tetragnatha*. Also found was the domed or bell-shaped retreat of *Araneus quadratus* woven in bent-over grass heads.

Species identified were:

- | | |
|------------------------------|--|
| <i>Xysticus cristatus</i> | - a common crab spider |
| <i>Tibellus maritimus</i> | - another crab spider, but with digar-shaped abdomen |
| <i>Pardosa amentata</i> | - a female wolf spider carrying her blue lens-shaped egg-sac |
| <i>Tetragnatha extensa</i> | |
| <i>Araneus quadratus</i> | |
| <i>Linyphia triangularis</i> | |
| <i>Clubiona</i> sp. | |

J.A. Stewart

Outing to Pressmennan - 30th July, 1983

Until 1955, Pressmennan, famous for its Oak trees planted in the first half of the nineteenth century, was part of the Biel and Dirleton Estate. It was then that it was taken over by the Forestry Commission and became part of Stenton Forest. (Stenton Forest is 3496 acres [1415 hectares], Pressmennan is 210 acres [85 hectares]).

Pressmennan lies on the side of Deuchrie Dod Hill - part of the Lothian Edge, an escarpment which divides the low rounded Lammermuir Hills of hard rock from the lowland country of softer rock to the north. It envelopes Pressmennan Lake, an artificial lake and one of three 'lakes' in Scotland. It was formed in 1819 by the damming of the Bennet Burn and stocked with fish for anglers.

The Forestry Commission initiated the planting of coniferous trees amongst the Oaks and other deciduous trees to provide a quick supply of timber. In the 1970's they laid out a Forest Trail for the enjoyment of the public and compatible with the role of timber production.

Thirty-three members met in the Forest car park. We followed the Forest Trail first upwards through the woods to the viewpoint and then to the highest point. From both points a good view of the agricultural land of East Lothian lowlands stretching to the Firth of Forth was seen, while behind us on the rising ground between blocks of trees, were patches of acid vegetation, typical of that found on the Lammermuirs.

A short distance further on the Trail turned left and we followed it down the hill through the wood to the lower Forest Path. Before following the Trail back to our starting point, we made a detour walking north-eastward and continuing downhill to reach the shore of the lake and the dam.

When we were on the Trail we spent time looking at the coniferous trees which had been planted by the Forestry Commission, recognising them as far as possible by their leaves (needles), buds and/or bark. Not many cones were showing and it was not always possible to link up the cones on the ground with a tree, nor was it possible to see the complete outline of many of the trees.

Conifers on the high path, in the order in which we saw them, included:

Norway Spruce (*Picea abies*) - the Christmas tree. The leaves or needles are soft and mid-green in colour. They stand on tiny pegs and are four-sided, being diamond-shaped in cross section.

European Larch (*Larix decidua*) - a deciduous conifer. Except on the tips of the branches the fresh green needles are in bunches on dwarf shoots.

Scots Pine (*Pinus sylvestris*) - our only Pine native to Britain, but definitely planted at Pressmennan for timber production. The needles are in pairs, blue green in colour and about 1½ inches long. The bark on the upper part of the trunk is reddish in colour.

Douglas Fir (*Pseudotsuga menziesii*) - the soft fresh green needles are solitary. When pulled away from the twig a round scar is left. The buds are brown in colour and long and pointed like those of the Beech. On the bark there are resin blisters.

Corsican Pine (*Pinus nigra*, variety *maritima*) - the needles, in pairs, are three inches long and usually show a distinct twist. They are greyer than those of Scots Pine. The buds are distinctive, being broad at the base and narrowing to a point.

Sitka Spruce (*Picea sitchensis*). Unlike the Norway Spruce the needles are flat and at the end have a very short, sharp point. They are green on top and whitish blue underneath, giving a slaty blue colour to the tree. The twigs, with the needles on them, are rather like bottle brushes.

On the last part of the walk after rejoining the Trail at the end of our detour, we passed through an area of Western Hemlock and Western Red Cedar. These had been planted in the shade of Silver Birch (*Betula pendula*) which had suppressed the weeds and allowed the two conifers to develop well.

Western Hemlock (*Tsuga heterophylla*) - the needles are of various lengths crowded rather haphazardly along the twig, but parted on each side. They have two broad white bands underneath. The buds are small and globular in shape.

Western Red Cedar (*Thuja plicata*) - the needles are much shorter than those of any other conifer examined on the walk. They are flat and hug the twigs. Their tips are not harsh as in Lawson Cypress (*Chamaecyparis lawsoniana*), which is not often planted for timber. When crushed they have a fruity smell.

Along the walk the party examined herbaceous plants in the woods, on the paths and at the water's edge and dam; Elizabeth Farquharson pointed out fungi and we looked for signs of mammals. These included a Badger set demonstrated by Elizabeth, cones stripped by Squirrels, bark frayed off young trees, probably by Roe Deer and, alas, tea bags at the car park. A list of birds was kept. Apart from Tufted Duck no waterfowl was seen on the lake.

A very good Forest Trail guide is published by the Forestry Commission and may be obtained at the cottage near the entrance to the car park.

J.K. Raeburn

Outing to Yellowcraig - 6th August, 1983

A lovely day and a very successful outing for a small party including Kate and Polly Sommerville and an enthusiastic young entomologist, Kevin Thom; their sharp young eyes and skill with the net helped us see many more species.

Dr Sommerville gave a very interesting potted life history of the greenfly, a truly remarkable insect, virtually indestructable.

Commenting on the difficulty of raising wild plants from seed which are so prolific when you think of species like the thistle and cow parsley, he went on to say how insects had damaged or eaten most of the seeds he had collected last year and attempted to grow. We were looking at a thistle head on which were minute pink grubs, capable of making great leaps, which feed on greenfly. Lifting the pappus of hairs, we saw a fat white grub which had obviously eaten all the thistle seeds on that particular head, thus neatly illustrating his point.

We are grateful to Dr Sommerville for taking us round our familiar Yellowtaig area and opening our eyes to so many new things (a list of the insects seen with some notes about them is with the Records Secretary) and for showing us what is not new, but in a new way.

M. Robertson

Cardrona Forest Walk - 27th August, 1983

On Saturday, 27th August nineteen of us assembled at the car park at the Kirkburn, $3\frac{1}{4}$ miles from Peebles on the edge of Cardrona Forest. We were following red markers which promised us a walk of approximately 4 miles. Just where we started we passed a Lime tree in full fruit with its whitish green bracts looking very noticeable. Further along while walking under Scots Pine we came on some cones cleanly stripped of their scales and seeds nearest to the tip - a sign of Squirrel. Later we found cones showing signs of Crossbills - the scales pulled back and the seeds torn out, but no stripping.

We stopped for lunch at the second viewpoint and by this time the sun was out and the view looking down on to the winding Tweed was very impressive. On the slope in front of us just beyond the seat we found a good specimen of Scaly Male Fern (*Dryopteris pseudomas*). We had a look later at Male Fern (*Dryopteris filix-mas*), Broad Buckler-fern (*Dryopteris dilatata*), Lady-fern (*Athyrium filix-femina*) and Hard Fern (*Blechnum spicant*).

On the path we found New Zealand Willowherb (*Epilobium nerterioides*), Common Hair Moss (*Polytrichum commune*) with its spore capsules standing up stiffly, Sand Spurrey (*Spergularia rubra*), Trailing St John's Wort (*Hypericum humifusum*) and Birdsfoot-trefoil (*Lotus corniculatus*).

Amongst the sedges and grasses we looked at were Ribbed Sedge (*Carex binervis*), Wood Sedge (*Carex sylvatica*), Yellow Oat grass (*Trisetum flavescens*), Tufted Hair-grass (*Deschampsia caespitosa*) and Sweet Vernal-grass (*Anthoxanthum odoratum*).

We noted that one section of the plantation which was mainly Scots Pine had plenty of light on the forest floor and there we saw Honeysuckle (*Lonicera periclymenum*) and leaves of Lady's Bedstraw (*Galium verum*).

Our path took us by the remains of old earth ramparts of what was possibly an ancient British Fort. Then it continued to the Tower, an old Keep, where we found specimens of Wall-rue (*Asplenium ruta-muraria*).

We enjoyed seeing the Red-berried Elder (*Sambucus racemosa*) in full red colouring. The berries of the common Elder (*Sambucus nigra*) were still green and yet to ripen.

Before we finished our walk we found a few patches of ripe Blaeberry (*Vaccinium myrtillus*) and wild Raspberry (*Rubus idaeus*) - a nice bonus.

B. Gordon

Joint Meeting with the Dundee Naturalists' Society -
10th September 1983 - Kingsbarns to Crail

It was a very blustery Saturday morning when we all met at the shore of Kingsbarns. Looking out to sea the waves were white edged, whipped up by the wind. We pictured having to batter our way against this strong wind for the five mile walk to Crail; fortunately, before long the wind abated a little, so some of us went down to the rocks to see what we could see of the marine life.

We looked at the seaweeds, the shells and the animal life and when we were nearer the cliffs we kept our eyes open for fossils in the rocks.

One of the green seaweeds we saw was Sea Lettuce (*Ulva lactuca*), another *Enteromorpha intestinalis* with its long fronds constricted at irregular intervals. Brown seaweeds included olive brown Thong-weed (*Himanthalia elongata*); Serrated or Saw Wrack (*Fucus serratus*) with its serrated fronds and no bladders; Knotted Wrack (*Ascophyllum nodosum*), olive-greenish brown with its single egg-shaped bladders at intervals in the middle of the frond and Channel Wrack (*Pelvetia caniculata*) with fronds inrolled to form a channel along the length of the frond. There was also the brown *Laminaria hyperborea*, lying in an abundance since it had been brought up to the shoreline by the storms. We had a good chance to see the strong holdfast as it is not normally above the water line.

We looked at *Lithophyllum* sp. growing on the rocks giving a pinkish purple hue. It was hard to believe that we were looking at a seaweed for its surface was so hard and abrasive to the touch. Another pink purplish seaweed with a calcareous deposit was the *Corallina* with its little white beads of calcium. A yellow sandy coloured seaweed seen was *Laminaria saccharina* with its wavy edges and crinkly undulations throughout its length.

Of the red seaweeds we looked at one, *Chondrus crispus*, known as Carragheen Moss in Ireland - a source of agar. Another red seaweed was Dulse (*Rhodomenia palmata*) which, at one time was very commonly eaten by the people in the west of Scotland and Ireland.

The following were some of the shells which we looked at: Thick Trough Shell (*Spisula solida*), Pullet Carpet Shell (*Venerupis pullastra*); Periwinkle - Common (*Littorina littorea*) and Flat (*Littorina littoralis*) - orange and red varieties of Common Dog Whelk (*Nucella lapillus*); Grey Top Shell (*Gibbula umbilicalis*), and Coat of Mail Shell (*Lepidochitona cinereus*).

In the pools we found green Shore Crabs (*Carcinus maenas*), Edible Crab (*Cancer pagurus*), Common Starfish (*Asterias rubens*) and a very busy Hermit Crab (*Eupagurus bernhardus*). Turning over a stone in a pool we

saw a minute Brittle Star (*Ophiothrix fragilis*) and some Dog Whelk eggs. There were plenty of Lugworm (*Arenicolidae*) holes and casts to be seen on the sand and Sandhoppers (*Amphipoda*) were in abundance.

After leaving the rock pools we came closer to the cliffs where we saw some of the rocks which had fossilised shells embedded in them; others had fossilised roots with stigmaria¹.

After rounding the point at Fife Ness we got a good view of three seals bobbing about and apparently taking an interest in our movements.

B. Gordon

¹ Roots of *Lepidodendron*.

Outing on Saturday, 17th September during the Oban Weekend -

The Black Lochs of Kilvaree Walk, Over Old Drove Roads

We had an extremely pleasant and easy walk around Kilvaree and the Black Lochs. Weather was warm and calm with few showers, giving little hint of the rain storms which were to lash the coast over the rest of the weekend.

There was the typical moorland flora of heath and sedges with marsh-land plants in the wet flushes, and being in the west, Bog Myrtle (*Myrica gale*) and Bog Asphodel (*Narthecium ossifragum*). Looking across the dark waters of the Black Lochs we saw natural woodland and hoped that it would remain untouched. There was evidence of old settlements and 'run-rig' cultivation while the twin peaks of Ben Cruachan were easily seen.

We noticed particularly the migration of the dark hairy Fox Moth (*Macrothylacia rubi*) caterpillars on the heather and paths; they hibernate and pupate the following spring. We also found a Dark Dagger Moth (*Acronicta tridens*) caterpillar feeding on hawthorn but our most spectacular find was the caterpillar of the Elephant Hawk Moth (*Deilephila elpenor*) feeding on Rose-bay Willow-herb. This was a large velvety brown black creature which treated us to its full 'threat' display, retracting the head into the thoracic region and puffing up its eye-spots and swaying to and fro. When seen under the lens the eye-spots were incredibly beautiful, shades of violet and khaki with black rings. The adult moth may be seen hovering at honeysuckle flowers at dusk in early summer.

Coming down to the Falls of Lora, near Connel Bridge, we noticed salt marsh flora on the muddy shore - Scurvy-grass sp. (*Cochlearia* sp.), Thrift (*Armeria maritima*) and Grass-leaved or Shore Orache (*Atriplex littoralis*), and the whirlpool effect of the tidal water meeting the river, reversing the flow.

And there was a lovely village wedding complete with piper.

M. Robertson

Lammermuir Circuit - 24th September, 1983

We set off into the hills at 11.50 a.m. after a good deal of delay because of the appalling weather. Torrential rain held us up in Gifford for one and a half hours. A complete change of route became necessary as the original one would have been waterlogged and difficult in such conditions.

We started at the Whiteadder Reservoir and took the path to Priestlaw Farm. The rain eased and the wind got up and we all began to feel better. We saw a lovely flock of Wigeon on the reservoir; Meadow Pipits, a Partridge and a few Heron were seen in the area. Soon after going through the farm the path turned in a southerly direction and having half circled the base of Priestlaw Hill we made for the summit through the Heather and Bilberry, tussocky grass and Bracken. As we climbed up we found Short-leaved Forget-me-not (*Myosotis brevifolia*)¹ on a little water course (NT 653622). We had lunch on the summit in the shelter of some old drystone dykes. After lunch we walked southwards towards the Longformacus road. There was much Mat-grass (*Nardus stricta*) on the way. Andrew Liston found a Northern Eggar (*Lasiocampa callunae*) moth caterpillar. Before we reached the road we crossed over the course of the gas pipe and here, where the ground had been disturbed, we saw a number of Sticky Groundsel (*Senecio viscosus*) plants blooming quite nicely in the late summer.

We crossed the road and came to the trig point on the hill opposite - a good viewpoint and we identified the hills and other features of the scene around us. From here we walked towards Duddy Bank keeping to the high ground as much as possible. Snipe were seen here, and Herons and flights of Red Grouse moving over the Heather. Over Duddy Bank we came to a good rough track above the Killpallet Burn. We followed this burn to its junction with the Faseney Water, crossing the Longformacus road again. Here there were eleven beehives and a man in a white overall and veil was attending to them. There are quite a lot in the Lammermuirs. It must be a worthwhile little enterprise.

The last part of the walk was along the east side of the Faseney Water back to the reservoir. This was wholly delightful. The little river cascades over a rocky river bed and through narrow rocky gorges overhung with Willow, Silver Birch and Rowan - almost Highland in character. Quite a lot of scrub Willow had spread into the Bracken. We saw Male Fern (*Dryopteris filix-mas*), Lady-fern (*Athyrium filix-femina*) and Hard Fern (*Blechnum spicant*). There were a few flowers still on Marsh Thistle (*Cirsium palustre*), Devil's-bit Scabious (*Succisa pratensis*) and Harebell (*Campanula rotundifolia*). The Heather (*Calluna vulgaris*) was still blooming. Some Bell Heather (*Erica cinerea*) seemed to be having a second flowering. There were four sightings of Dippers on this stretch of water. Three young Red Grouse were feeding on a flat area where the grass had been cropped by rabbits. They did not immediately fly off.

We had no more rain on the walk and got back to the cars at about 5 p.m. We had a good day's walking despite the unpromising start, and everyone was pleased with it.

G.M. Wood

¹ New record for East Lothian. Douglas McKeen of the R.B.G. has asked for a specimen for the Herbarium next year. (J.R.)

Outing to Vogrie Country Park - 8th October. 1983

An overcast and rather damp morning did not prevent a large turnout for the fungus foray to Vogrie Country Park on 9th October. This was a joint meeting with the Botanical Society of Edinburgh under the expert botanical guidance of Dr Philip Mason, and was a most successful day, culminating in a list of around 100 species. Drizzle continued unabated throughout the day, but Vogrie House provided shelter at lunch time, and a place for displaying and checking specimens in the afternoon. At any rate, no-one seemed deterred by the weather, and many seemed reluctant to leave at the end of the day.

The area had not been explored before so we were fortunate in having Eric Caulton, who lives nearby, to guide us round the Estate, and to make sure we did not miss one of the more spectacular sights of the day - a superb display of Orange Peel Fungus (*Aleuria aurantia*). Other brightly-coloured fungi included the Fly Agaric (*Amanita muscaria*) and its close relative the Blusher (*Amanita rubescens*), as well as a very lurid Boletus (*Boletus erythropus*) which is not only bright red, including the pores, but turns bright blue when bruised or cut. It is said to be edible when cooked! Stinkhorn (*Phallus impudicus*), on the other hand, makes its presence known by its smell; a specimen had to be evicted from the House at lunch-time.

The party saw a number of puffballs, but not the Giant Puffball (*Langermannia gigantia*) which had been discovered by workmen on the Estate the previous week. The specimen was on display, and was about skull size; apparently it gave the workmen quite a turn when they found it!

It is impossible to enumerate all the fungi we found, but there were enough edible ones to satisfy the gourmets, and a wide enough variety to satisfy the botanists. Many of the species were growing on living or dead trees and stumps: both the Jews Ear (*Auricularia auricula-judea*) and Witches Butter (*Exidia glandulosa*) were recorded, as was the handsome Oyster Mushroom (*Pleurotus ostreatus*), the Giant polypore (*Meripilus giganteus*), and at the other end of the scale, Candlesnuff Fungus (*Xylaria hypoxylon*), and a delightful troop of Fairies' Bonnets (*Coprinus disseminatus*) on a mossy stump. A much less attractive fungus found growing in large quantities in parts of the wood, however, was the Honey Fungus (*Armillaria mellea*) which invades the tissue of living trees by means of its bootlace-like rhizomorphs. It is extremely destructive.

An interesting conversation arose during the course of the day about our somewhat cavalier attitude to the fungi. We gather them with scant regard for any damage we may be doing. As someone remarked, you have hardly time to focus your camera on a new and interesting specimen before it is whipped away from under your nose! Perhaps botanists should be giving some thought to fungus conservation. I doubt, however, if anyone would be too worried about the baskets of Honey Fungus which were carried away for supper. The only problem was - do you really have to boil them and throw the water away - or can you just fry them in butter? I, for one, would be interested to know the answer.

J. Muscott

EDINBURGH NATURAL HISTORY SOCIETY

Use of Society Telescope

The telescope was purchased with funds from the Gunn bequest.

It is available to all Society members.

The equipment comprises telescope in carrying case and a mounting tripod in a separate carrying case.

The telescope is a Bushnell Spacemaster of 20-45 X magnification. It weighs 4 lb and is 15 inches long. The tripod weighs $5\frac{3}{4}$ lb and when folded it is 23 inches long.

The value of the equipment is £200.

It is insured by the Society.

The telescope is held by the keeper.

The telescope can be borrowed for 7-day periods. It may be held for longer than 1 week if it is not requested by another member. The borrower should return it to the keeper at the end of 1 week or contact the keeper then, or at the end of any successive week, in order to ascertain if the telescope has been requested by someone else.

The telescope is a delicate instrument. The borrower should inspect the equipment when he/she collects it. He/she will be responsible for the cost of any repairs arising out of damage whilst in his/her care. He/she should notify the keeper of any damage incurred during the period of borrowing.

The current keeper of the telescope is:

Mr C.P. Rawcliffe
35 Comely Bank Road
Edinburgh
Tel. No. 031-332-5296

*Peaceful walk on Spring forenoon
By the water of Torphin
Sunlight shining on the hill
All around so quiet and still
Suddenly a burst of song
Trilling, happy and prolonged
There, bobbing on a stone
A Dipper sings for me alone
The valley rings with melodious sound
Joys of nature still abound*

N.F.

